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## RECENT ADVANCES IN THORACIC SURGERY\*

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THE SURGICAL TREATMENT of many organs could be included under the term "thoracic surgery". Time limits this discussion to the lungs.

The term "recent advances" must be subject to wide interpretation. Where should one start? The present exists because of past endeavours, and the future will depend upon the present and the past. In order to evaluate a recent advance we must know something about the successes and failures that made it possible. World renowned discoveries are infrequent. There have been important technical contributions in the field of thoracic surgery—the evolution in the treatment of tuberculosis—one stage lobectomies and pneumonectomies—various types of operations on the heart—extra-corporeal circulation—refrigeration of subjects for cardiac surgery—extensive resections of the œsophagus—all of these are every day terms at present, but think of the past work that has made them possible. Most advances are slow and tedious. One link after another is forged into the chain, and few chains have been completed.

We must express gratitude toward those who laid the foundations in pathologic anatomy, and who discovered and developed roentgenology, bronchoscopy, œsophagoscopy, thoracoscopy, bronchography and anaesthesia under controlled pressure, without which thoracic surgery could not have reached its present stage of development.

*The development of lobectomy.*—Many authors have given credit to Heidenheim for performing the first successful operation in 1901. Priority may be questionable sometimes. It might be

interesting to requote to you a case report of a partial resection as given by Dr. Alexander<sup>1</sup> in 1935:

"The following lay account is at least amusing. A Monsieur Borell, in a 1757 issue of *The Universal Magazine of Knowledge and Pleasure*, reports a case as related to him by the patient, Monsieur Boatquet. A chronic thoracic suppuration followed a sword duel wound. Monsieur Juif, the surgeon, 'told the gentleman he would undertake to cure him if he would exactly observe what he should prescribe. But, withal, that he could not undertake to cure him, except the said patient would undergo to endure at sixteen several times, at every time as much pain as man suffers that is broke alive on the wheel; that his life was surely lost, except he undergo this; it being a thing worth the patient's consideration, he, the said chirurgien, did give him an hour's time to consider it.' Through a hand-sized square surgical opening in the anterior right chest, the surgeon pulled down 'the lungs, in the worst condition by putrefaction corrupted, toward the said opening and did cut them off with scissors, all that was corrupted, insomuch that he took off the greater part of the lungs; for the sword had hurt the lungs very near in the highest and thickest place and all that was under the wound was corrupted. Gradually the wound closed and the patient became perfectly well. He lived as he had done before, and fed hard. His humor was the same as formerly, being of a continual merry disposition.'"

From 1901 on isolated reports appear, and by 1925 85 cases had been reported. Lilienthal performed 34 of these with a mortality of 60%. Most of the operations were on debilitated patients with extensive suppuration. He did not have the advantage of modern anaesthesia or chemotherapy, so the high mortality rate is not surprising. Empyema was the usual cause of death, and many variations of technique were used to combat it.

In 1929 Brunn reported six one-stage lobectomies without a death. In 1932 Shenstone and Robert Janes described their tourniquet.

Bronchopleural fistula and empyema continued to develop all too frequently. The next step might be called the development of the dissection technique. Structures in the hilus, arteries, veins and bronchus were located and dealt with individually. The complication of empyema and bronchopleural fistula had decreased so that a surgeon should not be content

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if they occur in more than 5% of his patients, and the mortality should be comparable to that in appendectomy.

*Pneumonectomy.*—The first successful operation was performed by Nissen in 1931; the first in America by Cameron Haight in 1932 for bronchiectasis. This actually was two lobectomies performed at the same time. Dr. Evarts Graham in 1933 performed the first one-stage pneumonectomy for carcinoma of the lung. His patient—a physician—is still alive and practising.

These operations taught us that a bronchus could be closed and that it would heal. A quotation might emphasize the importance of this knowledge. The President<sup>2</sup> of the American Association for Thoracic Surgery said in 1933:

"The principal difficulty seems to be failure of the bronchus to heal unless patched over by a fold of lung. But in total pneumonectomy this is not possible and we must depend upon a concomitant collapse of the chest by thoracoplasty or else the patient must suffer the bronchial fistula, probably no more than the experience of a colostomy after total removal of the rectum."

Whether thoracoplasty should be concomitant with pneumonectomy continues to be a debatable point. We have chosen not to do it as a routine, but a few years may elapse before a firm opinion can be expressed.

The use of prosthesis to obliterate space after resection has been advocated by some surgeons. Plastic balls and moulds and oil plombage have been used. Space can be obliterated and overdistension of the remaining lung prevented, but the presence of a large foreign body in a movable field may lead to serious complications and does not appear very attractive. More investigation is necessary.<sup>4</sup>

At least it is felt that the operation of pneumonectomy is now as safe as operations upon the gall bladder.

*Diagnostic aids.*—Here, as in other phases, we have made progress. The cardinal principles of history and physical examination should not require emphasis. A few questions about chest discomfort, altered cough, wheezing and bloody sputum should not be forgotten. Examination of the chest may be entirely negative, but complete examination of the patient may reveal glands, skin nodules, which, when biopsied, will obviate the necessity for a major resection.

X-rays are our greatest single aid. Postero-anterior and lateral films should be routine.

Tomographs are helpful in determining the location and character of a lung lesion. Bronchoscopic examination should be used routinely. It may not be diagnostic in more than 50% of cases, but valuable information may be obtained. Tissue can be removed for examination if the tumour is visible. The source of sputum or blood may be determined. Bronchial secretions can be removed and information obtained as to mobility or otherwise of the tracheobronchial tree. The study of bronchial secretions after various stains, such as Papanicolaou's, is proving to be very valuable. The use of a punch biopsy should not be forgotten. Bronchography is a most valuable procedure. It provides the final diagnosis when bronchiectasis is suspected, and may give valuable information as to narrowing or blocking of a bronchus by a tumour or stricture.

If a positive diagnosis has not been obtained by conservative methods, and there is a reasonable suspicion that malignancy might exist, thoracotomy should be advised.

*Tuberculosis.*—Many of us will recall the great changes that have taken place in the treatment of this disease. The development of sanatoria and the segregation of patients for specialist care opened the modern era. Rest of the diseased part was the aim of all methods. This consisted of bed rest then collapse by pneumothorax. The efficiency of the pneumothorax was increased in many cases by dividing adhesions through the thoracoscope, by phrenic nerve operations and by pneumo-peritoneum. Thoracoplasty came into vogue for complete and permanent collapse of the lung.

Then came the era of resection. One can remember the early reports of lobectomy for tuberculosis, usually reported rather shamefacedly because the diagnosis had been wrong, but with an air of pleasant surprise because of the favourable results. Soon it was realized that major resections in tuberculosis were feasible, and thoracic surgeons, led by Overholt and other notables, developed the indications and technique. Instead of major resections we now may choose segmental resection or "lesionectomy".

Thus one sees a swing from "rest" to allow nature to heal a tuberculous lesion to surgical eradication of the disease. It is granted that one should consider surgical measures as an adjunct and that adequate rest should be considered the basis of all treatment.

The use of antibiotics—streptomycin and others

—has reduced materially the hazards of surgery in tuberculosis.

**Bronchiectasis.**—This has been recognized as a progressive and eventually fatal disease. Usually the lower lobes are involved, but frequently the middle lobe on the right and the lingula on the left are included. It is feasible to remove the entire right or left lung, or the lower and middle lobes on both sides without producing a chest cripple. The earlier in life the operation is performed, the more satisfactory the result. Patients who have had resections for bronchiectasis after middle age usually continue to have a certain amount of cough and sputum because of generalized bronchial infection.

**Tumours of the lung.**—Benign tumours are amenable to minor resection—lobectomy, segmental resection, wedge resection or extirpation of the tumour will be sufficient.

Malignant tumours continue to be our *bête noire* chiefly because many of them are found too late for surgery to produce a cure. This is not different to the history of malignant lesions in other parts of the body. Usually it is technically possible to remove the local lesion, but distant metastases eventually defeat the local manoeuvre. Ochsner in 1948 reported a review of 548 patients. One might summarize his experience quickly by saying that one-third of the patients had obviously inoperable carcinoma, one-third had a lesion found to be inoperable at exploration, and one-third had a resectable lesion. The gross survival rate after resection was 20 per cent at the end of three years, with little change up to five years. In cases of non-resection no patient survived three years.

These figures suggest a rather gloomy picture, but they show the prognosis to be better than in carcinoma of the stomach. Thoracic surgeons individually are stimulated by having patients alive and well ten and fifteen years or more after a cancer has been removed.

**Hæmothorax.**—Two Great Wars have helped to improve treatment in this condition. We know that blood will clot if left in the pleural space and that serious consequences will follow. Infection of the pleural space or in the collapsed lung is certain, and a high morbidity and mortality will be the inevitable result.

Early and complete aspiration of the blood and re-expansion of the lung is the correct treatment. If this has not been possible, decortication

after a few weeks and forced expansion should be done. To use the words of a well known thoracic surgeon "Our attention must be re-directed from the chest wall and pleura to the lungs themselves".

One could discuss many other individual conditions. It was felt that it would be more helpful to discuss a few points about developments in diagnosis, technique and application of methods.

Sir Reginald Watson-Jones<sup>3</sup> wrote an article entitled "The Dawn of Surgery" in which he stated—"This is indeed the Dawn. Never since the days of Hippocrates could a young man say with greater conviction that this is the age he would have chosen. This is the age in which to live, and in which to be young." And so the search goes on. The Dawn is always present, and every age is the age in which to live.

Let none of us be guilty of the thought expressed by a renowned surgeon many years ago. It does not detract from our memory of him to repeat it. In 1896 Stephen Paget wrote "We may see reason to believe that the surgery of the chest is now near its greatest height, and that its future upward course is checked by no fault of its own, but by restrictions imposed on it by the natural limitations that are set to all surgery, as things are at present."

We must continue our work thinking that nothing is impossible and that progress is as inevitable as the rising and setting of the sun.

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Progress in study of cancer in human populations is not retarded by any lack of hypotheses. On the contrary, their very abundance forces a more discriminating attitude in selecting for further test those which really deserve serious consideration. In doing so it is well to view present evidence with a critical, but not a scornful attitude. Although the difficulties which now beset us seem complex, it may be of some comfort to recall that the problems of our forebears in epidemiology seemed equally complex when viewed in the framework of their times. It is frequently stated that solution of the riddle of cancer rests upon an understanding of the intimate processes of life itself. Although time may very well prove this to be true, another hypothesis is equally tenable now, namely, that the complexities are of our own making.—A. G. Gilliam, *Am. J. Pub. Health.*, 43: 1257, 1953.

## FATIGUE—ITS CLINICAL SIGNIFICANCE\*

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FREQUENTLY A PATIENT consults his doctor because of a feeling of fatigue. Usually the cause can be determined readily, but sometimes the basis for the fatigue is obscure. This paper describes a practical approach to the analysis of the symptom by first defining the word fatigue as it is used by patients, second presenting a practical clinical classification, third outlining a method of inquiry illustrated by a group of case histories and finally discussing the differentiation between fatigue due to constitutional, physical and psychological causes.

### DEFINITION

Fatigue is a word with many meanings. The definitions found in authoritative dictionaries are inadequate with regard to the way sick persons use the word. Such definitions include "lassitude or weariness resulting from either bodily or mental exertion"<sup>1</sup>, "loss of power due to continued work but removable by rest"<sup>2</sup> and, as used by physiologists, the "condition of cells or organs which have undergone excessive activity with resulting loss of power or capacity to respond to stimulation".<sup>3</sup> As used clinically and expressed in simple terms fatigue is a *feeling* of difficulty in doing things. This may vary all the way from the mild aversion to activity experienced by one patient to the overwhelming feeling of exhaustion rendering another patient incapable of exertion despite a strong desire to be active. Examples of the different shades of meaning will be found in the subsequent case histories.

### A CLINICAL CLASSIFICATION

It is difficult to draw up a classification sufficiently comprehensive yet simple enough to be valuable. If one lists the causes of fatigue one includes almost all diseases—infective, endocrine and metabolic disorders, neoplasms, insufficiency or disorganization of organs and systems, nervous and emotional illnesses with their associated physiological disturbances. If the lesion or dis-

order gives rise to other manifestations, and the fatigue is proportionate to the degree of disability then the fatigue usually ceases to be a cause of concern. It is when fatigue exists alone, or out of proportion to other manifestations that it becomes a diagnostic problem. Therefore the following classification is oriented to the difficulty in recognizing causes whether primary or aggravating.

The numerous clinical settings in which fatigue occurs may be classified as follows:

1. Obvious serious disease of almost any type; the origin of the fatigue is apparent when a careful clinical inquiry is made.

2. Structural diseases of serious nature occurring without localizing symptoms. There are a variety of conditions which may give rise to this situation including otherwise symptomless tumours (some carcinomas of the cæcum for example), chronic infections, abdominal or mediastinal Hodgkin's disease. The continuing presence of unexplained disabling fatigue stimulates the physician to continue the search for the underlying cause.

3. Fatigue persisting for an unexpectedly long time in convalescence. (a) In old people many of whom recuperate slowly from illness. (b) After certain infections, especially some due to viruses. This is a common occurrence after infectious mononucleosis or infectious hepatitis. (c) In patients with poorly organized or inefficient bodily constitutions. Such individuals react excessively to various upsets and are often considered neurotic though their mental stability may be good compared to their physiological stability. (d) Overly apprehensive or hysterical patients who convalesce slowly because they are struggling with the burden of many personal difficulties.

4. Structural disease of varying severity but in which fear of disease is the main factor. Fatigue commonly arises when a patient becomes anxious about having any disease which endangers life or function. The result is the same whether the patient actually has the particular disease or not. The belief that there exists a physical handicap which will be aggravated by exertion is a common cause of fatigue. For example, a patient who mistakenly believes that his anxiety attacks are due to heart disease, may become tired on little exertion or even on the prospect of impending exertion. Many physical ailments are aggravated by anxiety and uncertainty as in the case of a

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person, fearful of becoming crippled by his rheumatoid arthritis, who attempts to ward off invalidism by drastic reduction in activity and avoidance of exertion.

5. Emotional problems and mood disorders. Patients with these conditions, for example, chronic anxiety states or involutional depressions, are often erroneously considered to have serious, structural disease. Emotional problems and mood disorders are much the commonest causes underlying fatigue of obscure origin.

6. Disturbances of the sleep-wakefulness regulating mechanisms in the central nervous system. Narcolepsy, though not common, may be responsible for obscure fatigue.

7. Healthy persons can experience temporary periods of fatigue as a result of excessive physical or mental exertion, sleep deprivation, emotional shock, boredom, or exposure to prolonged environmental stress such as extremes of heat or cold, loud noises or frequent interruptions preventing the accomplishment of a task. Inquiry along these lines usually reveals the cause and the steps necessary to remedy the situation.

#### CLINICAL APPROACH

Ryle in his interesting book "The Natural History of Disease" has emphasized the value of systematic symptom analysis. Using pain as an example he listed the following information as essential for proper assessment of the symptom: character, severity, situation, localization, paths of reference, duration, frequency, special times of occurrence, aggravating and relieving factors, and accompanying symptoms.<sup>4</sup> In a similar way fatigue can be profitably analyzed. The patient should be encouraged to describe his fatigue in all its circumstances; such a description will often lead to recognition of the cause. Specifically the following data should be obtained:

1. First, one should learn what sort of sensation the patient is trying to describe by the word fatigue or its more common synonym, tiredness. Even the intelligent patient may find detailed description impossible. Nonetheless, as some of the case histories show, a verbatim account of what the patient feels may afford valuable clues as to the cause. It is a mistake to expect that a diagnosis can be reached by this means alone, for often it is impossible to distinguish the fatigue of serious structural disease from that due to anxiety or due to a benign but

disabling infection, simply by having the patient describe carefully the way he feels.

2. The mode of onset, whether gradual or sudden, may be important. The setting in which fatigue appeared, such as in relation to an infection several months before or following the death of a beloved relative or friend can be very significant.

3. The duration narrows the possible causes down considerably. Most serious structural diseases run a course of less than five or ten years. Fatigue of life-long duration cannot be due to such a condition; the affected person is in all probability a constitutionally inadequate individual for whom life's everyday problems have been too much of a burden. In contrast to the asthenic, chronically fatigued person there is the rare and fortunate individual endowed with great vigour and an urge to be active who denies ever feeling fatigued. These tireless persons possessing a more rugged and better balanced make-up than most of their fellows can sleep soundly whenever they wish regardless of their responsibilities or nearby noise.

4. The constancy and progression of the symptom should be known. Fatigue of serious structural disease often becomes worse and worse, and in the later stages of the disease may be present all the time. Neurotic fatigue is more likely to vary widely from day to day or hour to hour.

5. The time of daily maximal intensity is of some, but not tremendous importance. Fatigue present on waking up, but decreasing as the day progresses, is a strong point in favour of the diagnosis of neurosis. However, one should not forget that many neurotically fatigued persons are worse later in the day. The fatigue of serious structural illness is more likely to become worse as the day progresses, particularly if much exertion is attempted.

6. Precipitating and relieving factors often help in differentiating between patients with mental illness and those with other conditions. Patients suffering from serious structural disease commonly find that physical exertion brings on and aggravates their fatigue. Whereas patients with mental disorders are more likely to relate their fatigue to boredom or frustration at work, periods of nervousness, or embarrassment in social gatherings. The latter patients usually describe little or no correlation between physical exertion and fatigue.

7. Inquiry should be made about sleep. Many tired patients have been sleeping poorly. Where insomnia is due to a physical ailment it can be traced to disturbances such as nocturia, paroxysmal nocturnal dyspnoea or pain preventing sleep. Sleeplessness so common in anxiety is different. The patient (though later he may deny any memory of mental unrest) lies in bed beset by worries and doubts, living over past mistakes or fearfully tilting with windmills of the future. Though he may attempt to keep these thoughts out of mind the struggle is at the expense of sleep. Even if he gets to sleep it is easily disturbed by unpleasant dreams or noises of the night which rouse him before daybreak.

8. Because anxiety is much the commonest cause of fatigue, particular inquiry should be made about emotionally upsetting circumstances. This necessitates the doctor really getting to know the sort of person he has as a patient. Frequently repeated interviews may be required to assess the patient adequately.

9. Accompanying symptoms direct attention to disturbances of organs or systems and may lead to the correct diagnosis.

#### EXAMPLES OF THE VARIED CLINICAL SETTINGS IN WHICH FATIGUE MAY OCCUR

A. A patient with serious structural disease but few localizing symptoms.

Mrs. A.A. This 73-year old woman had been energetic and healthy until sixteen months before visiting the clinic. Then she began to feel tired a few hours after rising. She had to lie down several times a day, for a nap. Such respite gave very brief relief and she felt it necessary to spend twelve hours in bed at night. Across the lumbar region there was an annoying aching which was aggravated by stooping over and would last hours at a time. It was present nearly every day. She lost her appetite and had a thirty pound weight loss.

The patient was quite pale. Despite the weight loss she was still obese. In the right abdomen was a deep, smooth, moderately firm mass about six inches in diameter. There was an hypochromic, microcytic anaemia with a haemoglobin of 52%. The stools were benzidine positive. Barium enema revealed a large, ulcerating lesion in the caecum and ascending colon.

A hemi-colectomy was carried out to remove the carcinoma. A few months later the patient reported a marked change: the fatigue, anorexia and backache were gone.

Here was an elderly patient (and old people fatigue more readily than young) who had a right colon carcinoma which by ulceration and bleeding had produced iron deficiency anaemia. Fatigue often accompanies anaemia and ulcerative carcinomas, in which case exertion usually initiates and aggravates the symptom.

B. A patient with a disease of serious nature with localizing symptoms.

Mrs. K.K. The patient, a quiet, pleasant 25-year old married woman of English upbringing felt perfectly well until a year before. The illness began with ankle swelling, present during the day but subsiding overnight, sacroiliac backache and moderately severe bilateral headaches. Seven months later the headaches became much more severe and now they were accompanied by nausea, vomiting, periods of visual blurring, anorexia and gradual weight loss. At this time she suddenly became aware of a constant, daily fatigue which she could only describe as feeling "just plain tired". This persisted for the remainder of the illness but meanwhile she became increasingly breathless on exertion and developed nocturia.

In examining this moderately drowsy, pale, somewhat obese woman one found that she minimized the symptoms. Serious disease would not have been suspected from her general appearance. The physical abnormalities were: narrowed retinal arteries, a few basal rales, blood pressure 164/104, moderate cardiac enlargement, a dry skin and slight pitting oedema of both shins. The haemoglobin was 50%, red blood count 2.3 million. The urinary specific gravity was fixed between 1.008-1.010 during a two hour test. The urine contained two-plus albumin, many red blood cells and 50-75 white blood cells per high power field. The non-protein nitrogen was 139 mgm. % and the creatinine was 9.3 mgm. %.

Despite the severity of her renal insufficiency the patient carried on housekeeping duties until admission. Very soon after entering hospital she became a great deal drowsier and so weak that slight exertion proved exhausting. She improved temporarily but six months later died in severe uraemia. Autopsy showed glomerulonephritis.

This is the history of a stable, rather placid person who exhibited unusual equanimity in the face of severe illness. Other symptoms, especially headache, preceded the fatigue. Perhaps the fact that her sleep habits were undisturbed contributed to the insignificance of tiredness as a manifestation of uraemia. Two characteristics of her fatigue deserve emphasis. In the first place the sudden onset, as is frequently the case, provides a clue to the mechanism of production. Occurring as it did with an exacerbation of symptoms and the addition of new indications of disturbed function, the fatigue can reasonably be related to a rapid, dangerous increase in renal insufficiency. Secondly, the fatigue persisted relentlessly in a manner which suggests that a constant metabolic disturbance was responsible. Contrast this with the fluctuating type of fatigue which many anxious people describe and which may be punctuated by days of relative freedom.

C. A patient with a benign, acute infection.

Mr. A.C. As happens to most people at some time or other, this 71-year old man was temporarily incapacitated by an infection, presumably of viral origin, which had marked fatigue as one of its manifestations. Two weeks previously there was a mild illness lasting only a day or two in which he felt feverish and his chest wall ached. Two days before the first clinic visit he suddenly developed nausea, vomited several times, in the next 48 hours had half a dozen watery bowel movements and

a mild, generalized, abdominal discomfort. At the same time fatigue suddenly appeared, described in the words, "I didn't feel as if I wanted to do anything". Sleep was markedly disturbed by gastrointestinal symptoms.

Initially, this elderly patient appeared dehydrated and had an oral temperature of 95° F. There was marked muscle fasciculation in the lower limbs, and to a much less extent in the hands. Within four days the illness subsided; all symptoms, including the fatigue, disappeared. A few days later his oral temperature was 98.6° F. and his fasciculation could no longer be seen.

Fatigue is a well-known feature of infections, acute or chronic, whether due to bacterial, rickettsial or viral organisms. Although sleep may be disturbed, often it is not, and therefore the tiredness is not due solely to sleep deprivation. It is tempting to consider the symptom along with fever, leucocytosis and antibody formation, as part of the defense against infection. Teleologically it could be said that the body is averse to activity in order to conserve strength for the battle between organism and host. This supposition is, however, too simple; the treacherous inroads of a serious tuberculous infection may not produce the slightest change in the way a patient feels, whereas a benign, short-lived infection such as the common "grippe" or "flu" may be accompanied by quite marked fatigue. It is difficult to understand why some patients who have had infectious mononucleosis experience fatiguability for several months after signs of active disease have disappeared. Severer, more acute infections sometimes require a shorter convalescence than more benign conditions. Relationships between symptoms like fatigue and the effectiveness of phagocytic and immunological responses remain, for the time being, obscure.

#### D. A patient with narcolepsy.

To this energetic 40-year old mother of four children the onset of a constant, "dopey", "sleepy" feeling came as a most disturbing surprise. She became aware of a gradually increasing sleepiness, a "dazed, dopey, limp, weak feeling in which everything seemed an effort", about 11 months before visiting the clinic. After a sound eight hour sleep she would find great difficulty getting out of bed, feel unusually tired all day and often sleep two or three hours in the mid-day without relief. Once while cooking, she fell asleep standing in front of the stove, but managed to slump into a chair. Another time she settled down with eagerness to hear a series of favourite radio programs, dropped suddenly off to sleep at six p.m. and didn't waken until three a.m., although meanwhile the children put themselves to bed without their usual supervision. At three a.m. the patient then went to sleep for another few hours.

After the physical examination the patient, who was left alone for a few minutes, promptly fell sound asleep despite the noise of footsteps and people's voices in the corridor. The physical status was that of an obese but otherwise healthy woman, with a sella turcica of normal radiological appearance and no evidence of diabetes insipidus. There was no past history of cataleptic attacks nor had any relatives been affected similarly.

She was given 5 mgm. of benzedrine sulphate with dramatic results: within a few minutes she became completely free of tiredness, no longer desired sleep and felt "like a twenty year old". During the next four months the sleepiness waxed and waned, but with the help of benzedrine she was able to regain a large measure of her former activity.

The patient's narcolepsy disappeared completely but six months later she began to have severe, throbbing frontal headaches. These continued for five months being accompanied latterly by vomiting, dizziness and staggering to her right. Bilateral papilloedema was found. A meningioma arising from the right orbital roof and lying along the sphenoidal ridge was removed. She has remained well since, a period of over two years. The narcolepsy was presumably an early symptom of the tumour.

It is interesting to compare the fatigue of a tense anxious person with that of a narcoleptic patient. The verbal descriptions may be similar, with mention made of a powerful desire for sleep, but here the similarity stops. The anxious individual is unable to obtain his usual amount of sleep which, when it does come, takes the form of a restless slumber disturbed by unpleasant dreams or slight noises in the neighbourhood. The narcoleptic is the opposite; he sleeps soundly and excessively but fails to satisfy the much increased sleep appetite. Benzedrine, a cerebral stimulant, may alleviate the fatigue of both, usually having a much greater effect on the narcoleptic, but its use in the tense, anxious person increases the jittery restlessness so that the ultimate result is poor.

E. A patient with a disability which, because of the accompanying anxiety, produced fatigue.

Mrs. M.S. While working in the parcelling department of a large store, this 60-year old widow fell and fractured her right wrist. Immediately afterward she experienced periods of tiredness, later accompanied by dizzy, faint spells. The fatigue was described in the words, "It feels as though I've done all I can and couldn't lift my arms any more, couldn't keep on, must stop and rest". In addition to this "all in" feeling which appeared after a few hours of trying to perform the housework, she had a depressed state of mind most of the time.

This widow lived with her son whom she was helping to support while he attended art school. Arrangements for an eagerly awaited annual vacation had been completely disrupted by the accident. In this setting the patient had been putting in time at home worrying about her inability to care properly for her apartment and the son's welfare, also about the possibility that her wrist would not mend well enough to allow resumption of the parcelling work. Sitting at home nursing her broken wrist she was aware of many things she couldn't do, felt insecure, was afraid to venture out on the street and visit friends.

Treatment included physiotherapy plus assurance that her stiff, swollen, weak and painful wrist would soon return to good function. She was advised to capitalize on her disability in the meantime by taking walks and visiting friends, both of which she had previously lacked the time to do. Three weeks later she returned to the clinic feeling better, free of the weak, faint feelings and the sense of depression, having rather enjoyed her enforced and restricted vacation.

Some people would have welcomed the opportunity to stay home from work, receiving compensation, but this patient did not. Fearful that her wrist would not heal, thereby jeopardizing her future as a housekeeper and wage earner, she lost interest in doing things, became mildly depressed and fatigued. It is interesting that her verbatim description of the tiredness demonstrated the close relationship to the disabled wrist in the words "couldn't lift my arms any more". A somewhat similar type of fatigue is found in people who fear they have a major disability such as heart disease, believe their activity should be drastically curtailed, deprive themselves of interests which usually afford them satisfaction, consequently lose the zest for doing things or, in other words, feel tired.

#### F. A patient with conversion hysteria.

Mrs. B.S. This 30-year old woman described herself as being "tired right out and tense all over", every day, for the last three years. The feeling developed rather suddenly while the patient was receiving sanatorium treatment for bilateral pulmonary tuberculosis. The disease had been diagnosed a year before but recovery had been interrupted by several set-backs. Anxious to do all she was told in order to get well quickly, she was dismayed to find that pneumothorax treatments were not technically possible. Bed rest she accepted well, but on two occasions there was an increase in the extent of the disease following slight increases in the amount of her activity. Associated with one of the tuberculous flare-ups were difficulty in sleeping, hypersensitivity to slight noises, a terrible feeling of tension all over the body and persistent tiredness.

The pulmonary lesions eventually became quiescent but before it was considered wise to discharge her, the patient signed her own release from sanatorium. Why? Because she felt that it would be possible to rest more at home, despite the fact that in the opinion of the medical staff she was already obtaining adequate rest. Increasing apprehension and preoccupation with her health led to a very poor adjustment and efforts to walk only short distances were made so unpleasantly awkward by tight feelings in the leg muscles that she became quite bed-ridden. This manifestation of conversion hysteria brought her to the Toronto Psychiatric Hospital. There was an excellent response to treatment which was essentially an education of the patient in the realization that the tension, insomnia, tiredness and inability to walk were somatic expressions of a fear of further pulmonary flare-ups. In the course of a few weeks she became more relaxed, and was able to sleep well without sedation and free of the tiredness.

Often it is difficult to know whether fatigue is related to chronic disease or anxiety over the disease. In this instance it is obvious that the tiredness was not related to the activity of the pulmonary tuberculosis because it persisted while the lesions became quiescent, and it disappeared in a few weeks during psychiatric treatment. Where fatigue develops suddenly it is frequently useful to determine the circumstances under which it appeared; this patient definitely related

it to an exacerbation in her tuberculosis but failed to realize that this symptom and the inability to walk which appeared later, were unhealthy ways of enforcing prolonged bed rest to avoid further relapses.

Insomnia was an aggravating factor. The more anxious she became, the less she slept. The less she slept, the more tired she felt. To compensate for the loss of sleep and to be certain her pulmonary disease would not progress she imposed upon herself prolonged bed rest ensured by an hysterical inability to walk.

#### G. A depressed patient.

Mrs. M.B. It is often difficult to say whether certain people are born to a life of trouble or whether it is brought on by their own personality defects. This 31-year old woman had had more than her share of misfortune beginning soon after her marriage at age eighteen to a boy one year older. He disliked being tied down by marital conventions and began to gamble, drink heavily and keep company with other women within a year of the marriage. By the time she was twenty-one the patient had two children and a husband who would stay away from home for weeks at a time without making any effort to provide financial support. At age twenty-three and again at thirty she suffered periods of mild depression. Meanwhile the marital situation had gone from bad to worse, ultimately requiring the intervention of the Family Court to negotiate a separation. Contrary to legal agreement the husband stopped contributing money, with the result that the patient had to accept help from her own parents and her husband's. Ultimately she was forced to obtain work and leave the children in the care of relatives.

It was in such a setting that the patient first noted ill-health: nervousness and tiredness, six months before visiting the clinic. During the last six weeks this had become much worse, accompanied by an "awful", depressed feeling. She began to sleep poorly, gradually noting constant, undue fatigue present throughout each day and described as feeling "depressed and tired, unable to do things; everything seems far away".

Examination showed a severely depressed woman with no abnormality otherwise. She was admitted to hospital, received electro-shock therapy with a temporarily beneficial effect but relapsed into a chronically depressed condition.

Depression can be accompanied by a number of somatic symptoms which may mask the diagnosis. They include insomnia, dull headaches, inability to concentrate, anorexia, constipation, loss of interest and energy. Fatigue can be present either alone or associated with other symptoms. When present it may be difficult to decide whether this is an added symptom or simply the patient's way of describing apathy, downheartedness, disinterest in former activities and general slowing down. The verbatim description, as in this case, may demonstrate how closely fatigue is linked to depression in the patient's illness, as well as separating it from the fatigue of a more cheerful person. It is probable that much of the

every-day fatigue of normal people represents one aspect of a mild, transient state of depression related to such things as boredom, frustrations at work or at home, a feeling that one's efforts are unappreciated and so on. In our fast-moving civilization where material success and a driving, ambitious attitude toward life tend to be over-emphasized people may occasionally glimpse the relative futility of their exertions and suffer a let-down, tired feeling.

H. A troubled patient with anxiety attacks.

Mrs. A.C. This 56-year old woman described undue fatigue which came on gradually about six years before. She said, "It feels as if I'm going to faint. There's a dizziness as if I couldn't see well. I have to sit down. I feel nervous and my heart beats quickly. I get tired in a minute". These sensations appeared during a most unsettled period of her life in which the stability of a long marriage was completely disrupted. During World War II, her husband who was serving in the Army in England gradually stopped writing his affectionate, almost daily letters and finally informed the patient that their marriage was over and he was going to live with a wealthy English widow. No further word was received and to aggravate matters, the patient later learned that she had no legal redress. Naturally enough major readjustments were necessary in her family life and in the provision of an adequate income. A job was obtained but this yielded only modest remuneration. In the face of these hardships a variety of somatic symptoms appeared including frequent backaches, cold feelings, insomnia, recurrent right-sided headaches of a migrainous character, buzzing in the left side of the head, tongue pains, dyspnoea on climbing hills, left epigastric pain and constipation. When these manifestations of ill-health presented themselves, the patient, who lacked any reserve of money, began worrying about having to give up her work. Added to this was the fact that she was employed by a greeting card company in which marked seasonal variations in the volume of business resulted in the dismissal of a number of the employees every time work slackened off. At her age new positions were difficult to find and unemployment a precarious and undesirable state.

On examination the patient was noted to be about forty pounds overweight with an elevated blood pressure which subsided to normal in a few months. Following discussion of her problems and reassurance with respect to her fear of disabling disease, the symptoms of anxiety diminished.

Here we have an example of undue fatigue coming in spells, with features typical of anxiety attacks—faintness, dizziness, nervousness, tachycardia. These episodes will be unexplained if organic disease, alone, is considered; the key, to at least a partial understanding, lies in the personal history, which in this case reveals obvious upsetting factors. Somewhat similar spells of fatigue may be a part of the common faint which frequently occurs as a bodily response to an unpleasant emotional situation, or the more profound vasovagal attacks with their bradycardia, faintness, weakness, chest oppression and feeling of impending death, or the attacks of flushing, sweating and weakness described by

women in the menopausal period. The precise way in which these vasomotor attacks produce a feeling of fatigue remains cloaked in mystery.

#### DISCUSSION

The patient who complains of fatigue is suffering from a *feeling* of difficulty in doing things. The cause may be in the *type* of *activity* which is difficult for the patient to perform or in the *patient's ability*, mental and physical, to carry out such activity. If the activity is too complicated and demanding or too monotonous and simple, or if it interferes with adequate rest and relaxation or is contrary to his economic, moral or social aims then the patient may *feel* that the activity is difficult to carry out or in other words may *feel* fatigued. The patient's ability may be impaired by depression or anxiety which, regardless of cause, reduce capability and lead to fatigue. If the activity contemplated or attempted aggravates the problems underlying the depression or anxiety then the fatigue becomes worse. The ability to be active may also be impaired by many generalized disorders such as anaemia, thyrotoxicosis or malnutrition. Generalized fatigue arises when there is insufficiency of the whole person in relation to certain activities. Contrast this with a symptom such as dyspnoea on exertion experienced when there is insufficiency of one organ, the heart, in relation to one type of activity, physical exertion.

The doctor who assesses a patient complaining of fatigue must answer one important general question before proper treatment can be started. Is the cause mainly constitutional, physical or mental? Is this patient tired because his make-up is such that minor illnesses, small changes in routine, or slight disappointments make him unwell? Or is he suffering from structural disease which perhaps can only be treated adequately by bed rest, drugs or surgery? Or is he disabled by mental illness only understandable after analysis of the patient's temperament, background and current problems?

After the patient has walked into the office we enter into conversation about how he feels. As he sits there, beginning his account, we observe his appearance—whether robust and vigorous, pale and wasted, tremulous and fidgety or slowed down and sad. We listen to him describe the illness, noting how strongly he feels about the symptoms—fearful, or indifferent, very resentful, or irritated. Both his appearance and the spoken

account impress us. Sometimes the one reinforces the other so forcibly that we might say to ourselves, "This man looks chronically ill, feeble and tired. His fatigue, weight loss and lack of appetite strongly suggest serious structural disease, perhaps carcinoma of the stomach". At other times, the patient's appearance is out of step with the description of his illness. He may be jumpy, talk quickly and jerkily, look worried and ill-at-ease but claim everything would be perfectly all right if only the constant tiredness would go away. In such a case one must learn much about that particular person—his family, home, work, religious and recreational interests before the symptom begins to mean much. Yet again another patient looking fairly well apart from being a little harassed and unsure of himself, may describe life-long ill health with many symptoms including little energy or endurance. It is wise to combine inquiry about past health with information about the patient's activities and responsibilities at the time. We may find that he leads a sheltered life, has few ambitions and little obvious stress to upset him. Yet pushed a little bit by the pressure of work or sickness in a relative he will feel unwell. Here is the man of poor physiological make-up who has neither serious structural disease nor disabling mental

illness. He does not need drugs or surgery, nor does he need long psychological analysis because under such treatment there is little chance of any fundamental change. If he can learn to understand that the fatigue is related to the sort of person he is, that it is not due to serious disease, physical or mental, and that prolonged treatment will not be beneficial he may come to pay little or no attention to it and lead a useful life within the limits of his own capacity.

There can be no short-cut to the understanding of obscure fatigue. Often minor or major structural abnormalities co-exist with evidences of mental unrest. To determine what is the real cause of the fatigue one must know the patient well—his temperament and his personal circumstances as well as the structural defects if such there be.

I am indebted to Dr. R. F. Farquharson and Dr. T. Owen for their interest and help.

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### LITHOSPERM-LIKE ACTION OF CERTAIN QUINONES AND RELATED COMPOUNDS\*

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SINCE THE OBSERVATION that extracts of the weed *Lithospermum ruderale* were used as a contraceptive by the Nevada Indians, a number of publications on the effects of similar treatment of experimental animals have appeared. Other workers using mice have found that feeding the plant or extracts of it, was followed by a cessation of the oestrous cycle, temporary sterility and atrophy of the primary and secondary sex organs. The development of mammary cancer in certain

strains of mice dependent on endogenous oestrogen secretions was apparently inhibited.<sup>1, 2</sup> The specificity of all these actions has been questioned because of either the concomitant interference with nutrition or the general toxicity of the plant.<sup>3 to 7</sup>

Extensive studies during the past 6 years in this Department using various species of animals and extracts of various species of *Lithospermum* and other plants have been published elsewhere.<sup>8 to 13</sup> The conclusions may be summarized:

1. All parts of the dried plant, or extracts given orally to mice and rats, inhibit the oestrous cycle and cause sterility, although the response to separately administered oestrogens remains normal. The dose given orally is very large, approximately 20 to 40% of dried plant in the diet or some 400 to 1,000 mgm. equivalent daily.
2. Water extracts administered by injection inhibit the development, or cause atrophy of the ovaries or testes and suppression of subsequent liberation of sex hormones. The secondary sex organs consequently remain in the immature state or atrophy. The thyroid gland

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atrophies and becomes inactive. The equivalent dose to cause such effects in the rat is 1/10 to 1/20 that required for oral action.

3. The action of certain separately administered gonadotrophins may be inhibited by injections of Lithosperm extracts in doses comparable to the preceding.

4. Certain pituitary hormones—gonadotrophins, prolactin (luteotrophin), thyrotrophin and pregnant mares' serum gonadotrophin—are readily inactivated when mixed with extracts of Lithosperm at neutral pH, before injection. Inactivation occurs with equivalent amounts of only 1/10 to 1 mgm. of dried plant. The other pituitary hormones—ACTH and growth, chorionic gonadotrophin, also insulin, etc.—are unaffected at such dose levels.

These results have led us to conclude that some specific substance is present in various species of Lithosperm which acts primarily by inactivating certain pituitary hormones. Although it has not yet been established that all the above actions are due to a single substance in the plant, the results might be readily explained by such a hypothesis. Other than the original report of the use of oral extracts by the Nevada Indians, the study of the effects on humans has been limited because of lack of standardized material and the hope that purified extracts might soon be available. One report suggests that some inhibitory effect on ovulation and progestational proliferation of the uterus of a normal woman might have been affected by the oral use of a water extract of 40 gm. of *Lithospermum officinale*.<sup>14</sup> During the past year a series of some 20 patients have been treated with extracts of different species of Lithosperm. Definite evidence of the type of activity as might be anticipated from the experimental results has been obtained in a few cases and will be reported separately.

Intensive efforts to isolate the active substance from Lithosperm have not yet resulted in a pure compound, although a phlobotannin structure has been suggested from the work of von Seemann by Skelton and Grant.<sup>15</sup> However, from the chemical and physical properties of certain purified fractions it has been possible to postulate the presence of specific types of compounds. It was of interest, therefore, to find that Sanyal<sup>16</sup> in India had reported that a methylated hydroquinone (2,6-dimethylhydroquinone) or similar acetylated compound was responsible for the sterility effect of feeding peas (*Pisum sativum*) in the diet of rats. This effect was believed due to an inhibition of progesterone since this compound was found to inactivate it when either mixed with or given separately from progesterone. Since similar compounds are found in many plants and could readily occur in Litho-

sperm, this and many related substances have been tested to see if they possessed Lithosperm-like activity.

The actions of Lithosperm which have been used to characterize it from other hormone inhibitors reported in the literature are the high degree of activity in causing direct inhibition of pregnant mares' serum gonadotrophin when mixed with it, the relative stability of chorionic gonadotrophin under the same conditions, and the anticestrous action after injection or oral administration. As will be shown in this paper, many quinones apparently possess the same inhibitory activity as extracts of Lithosperm.

#### METHODS

Immature (45 to 60 gm.) adult female rats of Sprague-Dawley or Wistar strains maintained on Master's Chow have been used. Extracts or the chemical compounds tested have been dissolved in a volume of 0.4 ml. per rat and adjusted to an approximate pH of 7.5 by the addition of dilute NaOH, except where noted. The gonadotrophin (P.M.S. 300 i.u./mgm. or chorionic gonadotrophin 500 i.u./mgm.) in a dose of 100 i.u. per rat and 20 i.u. per rat for the latter was contained in 0.1 ml. and added. After rechecking the pH the solution was incubated at 37° C. for 2 hours unless otherwise noted. Control gonadotrophin mixed with saline and then treated similarly was used in each assay. Immature rats received a single injection of the P.M.S. mixture or control solution and were killed 3 days later. The ovaries were carefully dissected and weighed. Groups of at least 2 or 3 animals were used for each dose level. With chorionic gonadotrophin, injections were given daily for 4 days and the animals killed on the 5th day. When adult rats were used vaginal smears were made daily before the start of daily injections and after for 2 to 3 weeks. The chemicals used were purchased from Eastman Kodak or Bios Laboratory and were not further purified. The 2,6-dimethylquinone, hydroquinone, quinhydrone and Na salt were prepared in the laboratory with the assistance of Dr. F. Pattison and Dr. C. Engel.

#### RESULTS

##### EXPERIMENTS WITH

##### 2,6-DIMETHYLHYDROQUINONE

Extensive experiments under different conditions have been performed with this substance. Groups of 4 to 6 rats were usually employed for each dose level and the compound mixed with 100 i.u. of P.M.S. as described. Initially it was observed that increasing the length of incubation time markedly increased activity. Also the addition of a trace of alkali (pH not above 7.5) enhanced the reaction. These different experiments are summarized in Table I. The compound was soluble at all the dose levels tested.

It may be noted that the activity of this compound is increased by incubation up to 24 hours so that complete inactivation of the P.M.S. may

be achieved with as low a dose as 0.01 mgm. The addition of various alkalis in amounts only slightly altering the pH causes enhanced activity. In addition a colour change occurs in the solutions with alkali, the initial colourless solution becoming reddish-brown. An acid pH apparently inhibits activity, but the readdition of alkali makes the solution capable of inhibiting P.M.S. In other experiments, to investigate this curious increased effect after the addition of alkali, it has been noted that the hydroquinone does not increase its activity if incubated alone for 120

In addition to testing the activity against P.M.S., 2,6-dimethylhydroquinone has been mixed with chorionic gonadotrophin. In this experiment the average ovarian weights were 76 mgm., 50 mgm., 62 mgm., for groups of rats treated daily with 20 i.u. chorionic gonadotrophin alone, +1 mgm. of 2,6-dimethylhydroquinone and +0.1 mgm. of the same compound. Although a significant inhibition was shown by the larger dose the smaller dose was inactive. This dose level was previously found to inhibit P.M.S. completely.

TABLE I.

CONDITIONS AFFECTING THE INHIBITION OF P.M.S. BY 2, 6-DIMETHYLHYDROQUINONE					
Compound	Dose per rat	Incubation time			
		30 min.	120 min.	24 hrs.	
		Average ovarian weights (mgm.)			
P.M.S. (control).....	100 i.u.	110-150	110-150	110	
P.M.S. ....	100 i.u.				
mixed with					
2, 6-dimethylhydroquinone (pH 6.5).....	2.0 mgm.	85	—	—	
“ “ .....	1.0 mgm.	118	33	—	
“ “ .....	0.1 mgm.	126	75	—	
“ “ .....	0.01 mgm.	—	103	36	
“ “ pH 5.5 (HCl).....	1.0 mgm.	—	114	—	
“ “ .....	0.1 mgm.	—	111	—	
“ “ pH 7.5 (NaOH).....	1.0 mgm.	48	13	—	
“ “ .....	0.1 mgm.	87	17	—	
“ “ .....	0.01 mgm.	100	200	—	
“ “ pH 8.0 (NaOH).....	1.0 mgm.	46	—	—	
“ “ .....	0.1 mgm.	64	—	—	
“ “ .....	0.01 mgm.	85	—	—	
“ “ pH 7.5 (NaOH + HCl + NaOH)...	1.0 mgm.	66	15	—	
“ “ .....	0.1 mgm.	129	13	—	
“ “ .....	0.01 mgm.	—	86	—	
“ “ pH 7.5 (KOH).....	1.0 mgm.	82	12	—	
“ “ .....	0.1 mgm.	115	57	—	
“ “ .....	0.01 mgm.	117	120	—	
“ “ Na salt pH 7.0.....	1.0 mgm.	86	19	—	
“ “ .....	0.1 mgm.	120	103	—	
“ “ .....	0.01 mgm.	—	136	—	
“ “ Na salt pH 7.5 (NaOH).....	1.0 mgm.	—	77	—	
“ “ .....	0.1 mgm.	—	83	—	
“ “ .....	0.01 mgm.	—	179	—	

minutes and then added to the P.M.S. for 30 minutes. However, if the P.M.S. is incubated alone at pH 7.5 with alkali for 120 minutes and then neutralized with HCl, it is inactivated by 30 minutes' incubation with the hydroquinone. In other words, the alkali apparently affects the P.M.S. making it more readily inactivated rather than affecting the hydroquinone.

In some cases it may be seen that at inactive dose levels the resulting ovaries were larger than the control ones produced by P.M.S. alone. This effect is frequently observed and is believed due to some enhancement by retardation of local absorption of the injected mixture.

The same hydroquinone was given in the drinking water ( $\frac{1}{4}$  mgm./ml.) to normally cyclic adult female rats. This dose level (approx. 5 mgm. per day) did not affect the oestrous cycle over a three-week period. However, the subcutaneous injection of 10 mgm. daily effectively abolished the oestrous cycle of adult rats, and 5 mgm. daily showed a slight action. With the larger dose considerable weight loss occurred.

#### EXPERIMENTS WITH OTHER RELATED QUINONES

Following the above tests it was decided to test other quinones and the oxidized equivalents.

TABLE II.

INHIBITION OF P.M.S. BY VARIOUS QUINONES				
Compound	Dose per rat	Solubility	Incubation time	
			30 min.	120 min.
			Average ovarian weight (mgm.)	
P.M.S. (control).....	100 i.u.	Complete	120-150	100-135
P.M.S.....	100 i.u.	Complete		
mixed with				
hydroquinone dimethyl ether pH 7.5 (NaOH).....	1.0 mgm.	Partly insoluble	—	161
	0.1 mgm.	Complete	—	95
2, 6-dimethylquinhydrone pH 7.0.....	1.0 mgm.	Complete	153	97
	0.1 mgm.	Complete	147	122
2, 6-dimethylquinhydrone pH 7.5 (NaOH).....	1.0 mgm.	Complete	—	19
	0.1 mgm.	Complete	—	19
	0.01 mgm.	Complete	—	153
2, 5-dimethylhydroquinone pH 7.5 (NaOH).....	1.0 mgm.	Partly insoluble	—	30
	0.1 mgm.	Partly insoluble	—	19
	0.01 mgm.	Complete	—	126
trimethylhydroquinone pH 7.5 (NaOH).....	1.0 mgm.	Complete	—	35
	0.1 mgm.	Complete	—	30
	0.01 mgm.	Complete	—	175
2, 6-dimethylquinone pH 7.5.....	1.0 mgm.	Complete	135	180
	0.1 mgm.	Complete	130	107
2, 6-dimethylquinone pH 7.5 (NaOH).....	1.0 mgm.	Complete	83	18
	0.1 mgm.	Complete	—	93
	0.01 mgm.	Complete	—	120
2, 6-dimethylquinone pH 7.5 (NH <sub>4</sub> OH).....	1.0 mgm.	Complete	—	28
2, 6-dimethylquinone pH 7.5 (NaCl).....	1.0 mgm.	Complete	—	155
2, 5-dimethylquinone pH 7.5.....	1.0 mgm.	Partly insoluble	—	119
	0.1 mgm.	Partly insoluble	—	99
2, 5-dimethylquinone pH 7.5 (NaOH).....	1.0 mgm.	Partly insoluble	—	29
	0.1 mgm.	Complete	—	32
	0.01 mgm.	Complete	—	110
hydroquinone pH 6.5.....	1.0 mgm.	Complete	—	151
	0.1 mgm.	Complete	—	104
hydroquinone pH 7.5 (NaOH).....	1.0 mgm.	Complete	—	17
	0.1 mgm.	Complete	—	16
	0.01 mgm.	Complete	—	96
hydroquinone diacetate pH 7.5 (NaOH).....	1.0 mgm.	Partly insoluble	—	24
	0.1 mgm.	Complete	—	39
	0.01 mgm.	Complete	—	108
p-quinone pH 7.5.....	1.0 mgm.	Complete	—	15
	0.1 mgm.	Complete	—	85
p-quinone pH 7.5 (NaOH).....	1.0 mgm.	Complete	—	20
	0.1 mgm.	Complete	—	14
	0.01 mgm.	Complete	—	76
o-quinone pH 7.5 (NaOH).....	1.0 mgm.	Partly insoluble	—	23
	0.1 mgm.	Complete	—	16
	0.01 mgm.	Complete	—	52
phenylhydroquinone pH 7.5 (NaOH).....	1.0 mgm.	Partly insoluble	—	15
	0.1 mgm.	Partly insoluble	—	18
	0.01 mgm.	Partly insoluble	—	78
1, 2-naphthoquinone pH 7.5.....	1.0 mgm.	Partly insoluble	—	56
	0.1 mgm.	Partly insoluble	—	127
1, 2-naphthoquinone pH 7.5 (NaOH).....	1.0 mgm.	Partly insoluble	—	18
	0.1 mgm.	Partly insoluble	—	15
	0.01 mgm.	Complete	—	49
1, 4-naphthoquinone pH 7.5 (NaOH).....	1.0 mgm.	Partly insoluble	—	38
	0.1 mgm.	Partly insoluble	—	75
2-methyl-1, 2-naphthoquinone (Menadione) pH 7.5 (NaOH)...	1.0 mgm.	Partly insoluble	—	19
	0.1 mgm.	Complete	—	124
	0.01 mgm.	Complete	—	170

Table II contains a list of some of these compounds. Most of these have been incubated for 120 minutes after the addition of alkali. In some cases the substances were not completely soluble at the levels tested, as indicated.

From these results it may be seen that practically all the quinones when tested with alkali showed an inhibition of P.M.S. activity.

The position or number of the methyl groups apparently caused little change in action, the non-methylated compounds being highly active. The naphthoquinones tested were also highly active despite their poor solubility. Of particular interest is the activity of "Menadione", a synthetic vitamin K preparation, and also gentisic acid.

The compound 2,6-dimethylquinone was tested against chorionic gonadotrophin. In this experiment, at dose levels of 1 mgm. and 0.1 mgm., there was no indication of inactivation of 20 i.u. of chorionic gonadotrophin. The injection of 5 mgm. per day proved fatal to adult female rats, but 0.5 mgm. per day did not affect their oestrous cycle over a 3 week period of treatment.

#### OTHER RELATED INACTIVE COMPOUNDS

A number of compounds more or less related chemically have been tested against 100 i.u. of P.M.S. in an attempt to determine the structure necessary for activity. The following substances at a 1.0 mgm./rat dose level, and with the addition of NaOH to pH 7.5, showed no activity. Benzoic acid, salicylic acid; hydroquinone dimethyl ether; 2,5-dimethylphenol; 2,6-dimethylphenol; 3,4-dimethylphenol; 5-hydroxy-1,3-dimethylbenzene; phloroglucinol; phthalic acid; isophthalic acid; tere-phthalic acid; p-phenylphenol; phenyl salicylate; 4,4'-dihydroxybiphenyl; diethylstilbestrol; nicotinic acid; piperazine hydrate; quinoline; 2,6-dimethylquinoline; 6-quinolinecarboxylic acid; rutin; dicoumarol. At the same dose level ascorbic acid and 2,4-dimethylphenol showed questionable activity.

#### DISCUSSION

The results which have been described show that a series of compounds of quinone-like structure have the ability to inactivate P.M.S. gonadotrophin when mixed with it. In this respect they show the same type of activity as previously demonstrated for extracts of Lithosperm. However, inactivation of the hormone would appear to take place rather more slowly with quinones, and the addition of NaOH apparently enhances the activity. These conditions have not been noted particularly with Lithosperm. In addition the quinones may cause complete inactivation of P.M.S. so that no ovarian or secondary uterine stimulation takes place. Although the difference may be related to total dosages employed, the customary finding with P.M.S. inhibited by Lithosperm is a small ovary but with hypertrophied interstitial cells and secondary stimulation of the uterus.<sup>13</sup> In addition, the quinones do not readily inactivate chorionic gonadotrophin in the dose level effective against P.M.S., a property similar to Lithosperm. Under different conditions, however, in-

activation may be accomplished.<sup>17, 18</sup> One quinone tested abolished the oestrous cycle in female rats following daily injection. This is similar to the findings of Sanyal<sup>16</sup> although, in other experiments to be reported, the mode of action by directly inactivating progesterone as he suggests has not received support. In addition, he found that 2,5-dimethylhydroquinone was inactive; whereas, this substance readily inactivates P.M.S.

Although the action of the quinones is very similar to Lithosperm it is probable that the active substance in the plant is different from those described. Attempts to extract quinones directly from Lithosperm have not been successful, although it seems possible that somewhat more complex substances in the plant may have very similar components. Naphthoquinones and flavones are common constituents of plants. Some naphthoquinones have been shown to be active and it is possible that flavones, such as hesperetin, may show activity.

If further study should substantiate these observations that quinones exert the same actions as does the active substance in Lithosperm, such synthetic compounds may be of practical value in therapeutic experiments.

The mechanism by which inactivation of P.M.S. takes place does not seem clear. Whereas, some compounds (hydroquinones) would suggest a simple chemical reduction, this action would not be expected after oxidation to the still active quinones. That the latter act as oxidizing agents seems unlikely since chorionic gonadotrophin should be as readily affected as P.M.S. by such a reaction.

#### SUMMARY

1. A series of quinones and related compounds have been tested for their ability to inactivate directly pregnant mares' serum gonadotrophin in a similar fashion to Lithosperm extracts. Many such substances possess this quality.

2. Such quinones do not inhibit chorionic gonadotrophin and may on injection have an inhibitory effect on the oestrous cycle of rats, similar to the action of Lithosperm extracts.

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## ADRENALECTOMY IN PROSTATIC CANCER AND MALIGNANT HYPERTENSION\*

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WHILE THE YEAR 1939 is best known for the Nazis' invasion of Poland, it was also marked by a significant advance in the battle against cancer: Huggins' observation that 70% of prostatic cancers showed signs of regression after castration. This affected both the primary and to some extent the metastatic lesions. He then demonstrated that similar effects followed the administration of oestrogens, and established for the first time that the growth of cancer cells could be influenced *both* by withdrawal of a substance normally present in the body (testicular androgen), and by the administration of a synthetic substitute for another normally occurring agent (oestrogen).

It soon became evident, however, that the favourable effects of withdrawing androgen and of giving oestrogen were only temporary, varying in duration from six months or so in most instances to many years in a few. Scott has attributed these variations in response to differences in the biological potentials of various cancer cells; he cited a patient who had a suprapubic enucleation of the prostate in 1928 with a histologic diagnosis of cancer. He returned in 1953 for transurethral resection, having had no treatment in the meantime; the histologic diagnosis was the same.

While the transitory effects of therapy with hormones as well as total failures can be explained by assuming, somewhat vaguely, that the more malignant cells are immune to the effects of hormones or soon escape from their influence, it has long been known that castration stimulates the anterior pituitary. This is evidenced by histologic changes in the gland itself and by an increase in the urinary gonadotropins. Moreover, adenomatous changes in the adrenal are not uncommon in castrates. This led Huggins and Scott in 1945 to the hypothesis that relapse might be due to an increase in the androgen output of the overstimulated adrenal in the castrate. They therefore performed total bilateral adrenalectomy in four patients with relapsing prostatic cancer. The deficiencies of available adrenal substitution therapy were such that only one patient could be kept alive long enough to permit any conclusions. He survived 110 days, but his cancer was apparently not influenced.

The advent of cortisone prompted Huggins to try again, and in 1951 he and Bergenstal reported that seven of eight patients with relapsing prostatic cancer survived total adrenalectomy; five of the seven exhibited some improvement, mainly subjective in character (reduction in pain, improved appetite and well being, increased activity). Regression of the neoplasms and their metastases was slight or nonexistent. Elevated phosphatases tended to fall, but only temporarily. Their longest period of observation was nine months. Scott has since stated in the Yearbook of Urology for 1952 that Huggins has abandoned adrenalectomy for prostatic cancer, and that he himself regards it only as a tool for research.

Since the initial report of Huggins, 46

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instances of bilateral adrenalectomy for relapsing prostatic cancer have been reported in the literature. Nearly all of the patients had been castrated, and all had received oestrogens and were in relapse. West, Hollander, Whitmore, and Randall have reported 10 cases, Baker 11, Smith and Young one, Leadbetter six, McLaughlin and Harrison 15, and Scardino, Prince and McGoldrick three. There were five surgical deaths, or 10.8%. The period of followup varied from a few months to two years; most of the reports were made so promptly that it is impossible to assess results accurately. Thus West *et al.* report seven survivors with "some relief" up to seven months, while Baker had three of eleven living 9 to 13 months with no very striking relief but with tolerable comfort. Smith and Young's previously bedfast patient was well for five months, then relapsed. McLaughlin and Harrison with 6 of 15 patients alive 6 to 24 months, felt that the procedure was worthwhile. Two of Scardino, Prince, and McGoldrick's patients died in four months without benefit, while the third was quite well at nine months.

Our own series consists of five cases ranging from 59 to 74 years of age. All had been castrated and had taken oestrogens. There was no surgical mortality, but the patients have all died after postoperative survivals ranging from 2½ to 11 months. Relief of pain was observed in but two of the five patients; it lasted one month in one and seven in the other. All relapsed and three subsequently underwent cordotomy from which one died. There was pronounced regression of the primary lesion in only one patient but he had had a colostomy for rectourethral fistula shortly after the adrenalectomy; shrinkage of the prostate followed healing of the fistula and may have been due to subsidence of associated inflammatory changes. The local lesion began to grow rapidly seven months after adrenalectomy. Metastases did not change. The acid phosphatase was elevated in two patients; it fell somewhat after adrenalectomy but soon rose again.

Looking critically at the results in a total of 59 patients, one cannot escape the feeling recently expressed by Scott that total bilateral adrenalectomy for prostatic cancer may be a tool for research rather than a mode of therapy. This view is reinforced when one considers the magnitude of the undertaking in necessarily poor risks; the uncertain prospect of relief which, when obtained, is usually fleeting, and the utter

dependence upon cortisone for survival. However, since the situation without adrenalectomy is entirely hopeless, even an occasional protracted survival will be, from some points of view, worthwhile. Final judgment will have to await the end results of those series already cited.

The basis for the use of adrenalectomy for malignant hypertension is speculative. Soffer has summarized the known relationships between the adrenals and the blood pressure. As concerns the cortex, it is established that the use of desoxycorticosterone (doca) in Addison's disease will sometimes cause hypertension, which disappears upon withdrawal of the drug. There is a case on record in which a well-established essential hypertension disappeared when Addison's disease developed, and reappeared with the administration of doca. Furthermore, this agent will produce hypertension in an occasional intact animal. It is known that cortisone will restore the blood pressure to normal in the Addisonian. Additional evidence of the possible relationship of the cortical hormones to hypertension is to be found in its frequent occurrence in Cushing's syndrome. Lastly, the pressor effects of epinephrine and norepinephrine from the normal medulla, and their hypertensive effects in pheochromocytoma are well known.

These considerations apparently prompted Green, Nelson, Dobbs, and Smalley to try total bilateral adrenalectomy in 1948 for malignant hypertension in a young woman with severe, labile diabetes. She was much improved 15 months later. In 1951 Zintel *et al.* reported the use of subtotal adrenalectomy in 11 cases followed 4 to 12 months. There were three surgical deaths. While all were cardiac invalids before operation, all of the survivors were up and about afterward, although four still had diastolic pressures above 120 millimetres of mercury. Six had some pigmentation, and two required replacement therapy. One may therefore suspect that good results depended upon the production of adrenal insufficiency.

Harrison, Thorn, and Criscitiello reported 15 total bilateral adrenalectomies for malignant hypertension and nephritis in 1952. They concluded that uræmia was a contraindication to the operation. There were four early postoperative deaths from cardiac disease, three from renal failure, and one from an Addisonian crisis. Five died shortly after the postoperative period. Of

the six survivors, one was a cardiac invalid while 5 were improved and active to some extent.

Our own four cases suggest that the procedure has possibilities. The first patient, a female cardiac invalid of fifty with a double mitral lesion and a preoperative blood pressure of 280/160 had not benefited from protracted conservative therapy. There was severe hypertensive retinopathy. She was rehabilitated, regaining useful vision and the ability to do her housework, only to die six months after operation of coronary thrombosis. Her blood pressure three days before death was 206/130. The apparent anomaly of striking clinical improvement despite a very moderate fall in the blood pressure is probably related to the drop in the diastolic pressure from 160 to 130. Dr. George Fahr has stated that the severe complications of hypertension rarely appear with diastolic pressures below 140.

The second patient, a woman of 35, blind, bedridden, suffering from renal failure, and not helped by previous sympathectomy, died eight hours after operation of retroperitoneal hæmorrhage, a hæmorrhagic diathesis having gone unrecognized before operation. This was an obvious error of judgment.

The third patient, a male of 44, experienced no benefit, and died of hypertensive encephalopathy one month after operation.

The fourth, a physician of 43, had become addicted to drugs because of intolerable headaches apparently due to a blood pressure of 240/160. Total bilateral adrenalectomy was done on July 7, 1951. On June 1, 1953, (23 months later) he was pigmented, the blood pressure was 140/95, and he was working part time in a state institution.

Those interested in hypertension at the University Hospitals are presently engaged in an evaluation of various vasodilator drugs, so that this project has come to a halt, although it appears to have some potential value in those patients who remain incapacitated from malignant hypertension despite the most painstaking medical therapy, although still possessing good renal function. Further application to such cases appears to be warranted.

#### SUMMARY AND CONCLUSIONS

1. Patients are able to survive total bilateral adrenalectomy owing to effective substitution therapy with cortisone and doca.

2. The performance of this operation in patients with carcinoma of the prostate relapsing after successful endocrine therapy is followed by variable results. A very few patients have again shown signs of improvement and have survived in reasonable comfort for as long as thirteen months. The number of cases and length of followup are too short to permit definite evaluation. One of our five patients was comfortable for seven months.

3. The procedure may occasionally rehabilitate patients incapacitated by malignant hypertension which resists good medical treatment. One of our patients is alive and working after twenty-three months.

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The most vitally important lesson which WHO has learned, and is teaching, is that effective health work can be carried out only within the framework of a sound and orderly system of public-health administration. This explains the relatively large number of projects through which WHO is attempting to contribute to the establishment, or strengthening, of modern health administrations. This also confirms the importance given by WHO to projects for the education and training of local health workers.

Nothing will be achieved by restoring good health to millions of human beings if, due to lack of capital investment, they only swell the ranks of the unemployed and add to the economic burden which their communities already bear. Conversely, no amount of money will be able to stimulate agricultural and industrial development effectively if the men and women for whom new opportunities are thus created continue to be plagued by physical and mental ills. And, finally, unless endowed with the intellectual and moral values which education and culture can bring, even a healthy and economically productive people cannot help to build a peaceful world. —*Chronicle of the WHO*, October, 1953.

## A CLINICAL SURVEY OF ALCOHOLICS

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THE PROBLEM of acute alcoholism has assumed in recent years a vivid and perplexing picture which with its involved socio-economic ramifications increases in complexity with the passing years. So that to regard the alcoholic problem principally as a psychological or physiological, or perhaps more broadly a medical entity, is a restricted viewpoint. It might be analogous to a clinician, confronted with a pathological syndrome, making a diagnosis of pyrexia and no effort to ascertain the etiology, definitive diagnosis, treatment and prognosis of the disease in question.

One cannot, if one is concerned in the care and treatment of alcoholics, ignore the sociological implications associated with this problem.

Both local and national governments show considerable ambivalence with regard to the sale of alcoholic beverages. On the one hand there is the chronic picture of the alcoholic individual who is dependent upon social agencies, penal and hospital institutions; the effect of his alcoholism on his home and dependents. Our daily accident and mortality figures bear striking testimony implicating indiscreet alcoholic consumption. On the other hand we must recognize the trend towards greater centralized governmental control of the individual and to make this control more acceptable many social amenities must be forthcoming, *viz.*, free medical services, social securities of various types, free schooling, etc., to compensate for this governmental authoritarianism. These increasing social benefits require an increasing tax revenue, and the revenue acquired through the sale of alcohol does not constitute the least of this income.

Our present day citizen is, in his conceptual thinking, bombarded by all manner of applied psychological devices to encourage his consumption of alcohol. Advertisements of alcoholic beverages carry the vehement approval of "men of distinction", film stars, outstanding athletes, in short the idols of our present day society.

It is not surprising then that a civilization which has learned to accept and place great

credence in the printed word, the radio, cinema, and television, should accept alcohol so readily in an effort to cope with the many emotional and social insecurities so intimately related to the cultural mores of our times.

Perhaps it is of more than passing interest to note that, although the present day citizen is so much protected—all foodstuffs must clearly state the presence of any innocuous adulterant or food dye, even the ordinary mild analgesics and antipyretics state their dosage with the epilogue "it is dangerous to exceed the stated dose,"—yet no one alcoholic beverage sold to the public is required to indicate in any way that overdosage is fraught with dangerous complications and perhaps even syncope.

In the writer's main field of activity, namely the care and treatment of mentally retarded children, our statistical data show strong correlation between the incidence of primary amentia in children and the incidence of alcoholism of the male parent. Whereas many other factors will have to be eliminated before these figures establish statistical validity, preliminary assessment indicates strong relationship.

"Alcoholics are those excessive drinkers whose dependence upon alcohol has attained such a degree that it shows noticeable mental disturbance or an interference with their bodily or mental health, their interpersonal relations and their smooth social and economic functioning; or who show the prodromal signs of such developments."<sup>1</sup>

This broad generalization is a good one, but it does not fully describe the clinical picture. Clinically we have found two important subgroups and have divided them into the categories of (a) primary, and (b) reactive, or secondary, alcoholics. A total of 32 patients were observed and studied. They consisted of committed and voluntary admissions to Western State Hospital, Kentucky, outpatients at the outpatient clinic of that hospital, and patients seen at the Provincial Guidance Clinic at Red Deer, Alberta. It is interesting to note that, although these patients represented wide geographical and cultural backgrounds, the psychological dynamics and findings showed such striking similarities.

The conclusions and discussions are based on psychological test results and clinical evaluation procedures. Psychological data were obtained from (VIBS) Wechsler-Bellevue Intelligence Scale, Rorschach, Thematic Apperception Test, Blacky Pictures, and the Minnesota Multiphasic

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Personality Inventory. All the patients were encouraged to undergo the entire battery of these tests.

Early in our assessments it became apparent that our alcoholics presented two distinct clinical pictures. At first the distinction became quite apparent on the basis of our psychological testing data. The approximation of mental capacity yielded by the Bellevue Scale was used as the basis for comparisons between potential and obtained quality of production on the other instruments. Patterning on the Bellevue (VIBS) Scale was not remarkable, with this exception: the reactive or secondary alcoholic in whom obsessive-compulsive neurosis features were otherwise detectable, tended to have relatively high information and vocabulary sub-test scores and to give the usual wordy, pedantic and alternate responses, often with doubt and vacillation.

Like other investigators, we found the Rorschach records of the primary alcoholics to be in general of lower quality than the mental capacity would lead one to expect. Productivity was comparatively low as was associational range. Responses tended to be simple and unelaborated, with mediocre expenditure of mental energy; phantasy-dictated responses (M) and organizational activity (Z) were often surprisingly low. Typical Rorschach signs of anxiety (shading, vista, extremely vague percepts) were infrequent. Relatively low anxiety-tolerance is, of course indicated by the configuration. There is not enough constructive phantasy, satisfying inner life, to turn to for problem-solving and refuge from frustrating situations. Some Rorschach records were not particularly revealing, as might be expected.

The reactive or secondary alcoholics' records, in contrast to those of the primary alcoholics, showed the cardinal signs of neurosis; emphasis on shading, vista, vague percepts (anxiety), CF emphasis and shading or colour shock (emotional lability), or inhibition. The most anxious of the patients often gave configurations implying mixed neurosis (obsessive-compulsive and hysterical).

On the Thematic Apperception Test, primary alcoholics tended to give abbreviated, unreflective, or "cliché" stories, with little apparent identification or empathy with the characters. Often they merely described the scenes. Their productions provided comparatively little information as to their "significant persons".

The reactive alcoholics, on the other hand, became emotionally involved in the TAT procedure. Their productions, on content and verbalization, suggested the type of neurotic element predominating. The reactive alcoholic was generally interested in the characters and often revealed much about relations with his significant persons, valuable information for the patient's psychotherapist.

The Blacky pictures have been of limited value with our alcoholic patients. Primary alcoholics generally did the task in a perfunctory manner, for the most part describing rather than interpreting the pictures. With the possible exception of the scene in which Blacky is nursing, the pictures yielded little worthy of note. These patients regarded the procedure as silly or useless.

Emotional reaction, implied variously, to the Blacky pictures was the rule with the reactive alcoholics. The stories were longer and more detailed. Both the stories and the responses in the inquiry were indifferent or "not strong" much less often than those given by primary alcoholics. Results thus far suggest that the scenes referring to anal sadism, the Oedipus situation, autoeroticism, and super-ego are likely to evoke clear emotional reactions in the patient who is alcoholic because of an exogenous neurosis.

The Minnesota Multiphasic personality profiles of the primary alcoholics were generally flattened out, with fewer peaks than is characteristic of the normal personality. Some graphs were almost straight, varying but a few points above or below the mid-line. Scores on uncertain and other validity-reflecting scales were unfavourably high. These patients generally had no enthusiasm for the task and finished it as quickly as possible after they had agreed to do it.

The reactive alcoholics, however, regarded the test as of possible benefit to them and worked conscientiously. Hysteria, hypochondriasis, and psychasthenia scores were high, singly or in combination, in keeping with the symptom picture as a whole. The Psychopathic Deviant score may be abnormally high along with the usual neurosis-indicating scores, when unconventional behaviour has been a feature of the symptomatology. Reaction formation against reaction formation may account for such a configuration in a severely neurotic alcoholic patient.

It is noteworthy that a few primary alcoholic patients who denied all neurotic complaints and

who insisted on speedy release from the hospital refused flatly to take the test battery. They said they regarded themselves as free from mental or emotional disorder and the tests a waste of time.

An alcoholic patient's statements and general behaviour, as well as his sincere conviction, may often imply absence of neurosis in the etiology of the case when actually it is present. A battery of psychological tests may save much time in detecting such cases and provide the psychotherapist with important leads in the detection of the primary from secondary or reactive type of alcoholism.

Early on in our study individual psychotherapy was instituted with every one of our cases. Here, too, the contrast between these two groups of alcoholics was most apparent. The primary alcoholic had an air of complete control of the situation and, although rapport was established with most of this group, there was an aura of considerable resentment against the therapist which was often difficult to overcome. This was particularly apparent with our male patients.

Histories obtained from this male group invariably showed father antagonism and fixation on a mother figure, but the fixation was tinged with considerable sadistic colouring. It was often related how much the patient's wife, mother, aunt, sister had done for the patient and how often they had been "let down", but the primary male alcoholic seemed to derive considerable satisfaction in relating this suffering or pain he had caused. Regret, although often expressed, tended to be affectively flat and there was the assurance given that this alcoholic situation would never occur again. This was in light of the evidence of recurrent alcoholic episodes over a period of many years. Questions were asked in every one of these cases if they knew of or would try a course of Disulfiram.\* Although the majority had heard of these tablets and were aware of their use, this suggestion that they be tried was vigorously rejected. The reasons given were mainly that they regarded dependence upon a drug unworthy of their abilities and control of the situation, and also they had finally learned their lesson and there was no danger of any further lapse.

The group we termed as reactive or secondary alcoholics showed marked differences. From their histories there was invariably a pressing

and unresolved emotional, marital, or socioeconomic difficulty. There was amongst the higher intelligence group a history of unfulfilled ambition, an inability to see a solution to frustrating problems. A futile rebelliousness against situations which required acceptance, albeit often of an unpleasant character. Affect was frequently markedly depressive, but especially amongst those showing high psychopathic deviation on the Minnesota Multiphasic Personality Inventory were there strong indications of anxiety and hysteria. Rapport with this group was quickly established, as well as early positive transference. It was amongst this group where we had the greatest numbers who, when questioned whether they would be willing to try Disulfiram, showed the greatest eager acceptance. It is also in this group after this therapy was instituted that we had two attempted suicides. Other writers<sup>2</sup> have also reported actual suicides in association with the taking of Disulfiram. Notably in Denmark where cases were tabulated, ostensibly without mental confusion. Cases of death associated with the taking of Disulfiram have also been reported in the U.S.A., Canada, Austria. It is our belief that alcohol restrictive drugs in the secondary type of alcoholic represents grave potential suicidal dangers, and the success in treatment of this group should be with other psycho-therapeutic means, with the work directed towards the underlying cause and the alcoholism regarded as secondary.

Group studies were also made with our alcoholic patients which we termed seminars. These were held three times weekly and were also attended by the hospital chaplain, the clinical psychologist and the writer. The rôle of the officials was one in which they as specialists in their fields might furnish a source of reference in the event of difference of opinions or if information was requested.

Introductory remarks were given indicating that this was a group which suffered from the same complaint and we felt that by searching discussion some solutions and insight might be gained which might be of benefit to some or all of us present. The passive rôle of the staff members was previously arranged, and the suggestion was made that the patient and group attempt to arrive at their own solution to their disability.

Here again the clinical picture showed two distinct cleavages. It was the primary alcoholic who showed the greatest response to these meet-

\*Sold as Antabuse.

ings. There was marked competition amongst them to speak. Their discussions ranged from alcoholism which often appeared to have little sustained interest to them—it would frequently come out that this was of little real concern since there was little danger of recurrence—to the prospects of the presidential election, or the war in Korea. Efforts to restore the discussion back to the purpose of the seminar seemed to be regarded very often as unwelcome interruptions. There was distinct vying for leadership amongst these patients, and when the therapists present were called upon by the patient it was more to gain prestige or backing for statements made rather than to seek information. There was an aura of importance amongst them and considerable regret at the end of each 90 minute session. Enthusiasm through the duration of these seminars was high, and these patients often remarked that they received benefit for the first time in the several times they had attended hospital, or homes for inebriates, or taken drinking "cures".

The reactive alcoholics on the other hand, although apparently interested during these seminars, developed little real participation. Attempts to draw them into the discussion would achieve little more than the response to the question asked and they appeared rather over-awed at the verbosity of the primary alcoholics. They were able to develop little real empathy with their fellows, and at the end of each seminar there were often one or two secondary alcoholics who would ask for an interview later on with the psychiatrist to discuss their own problems.

Sexual interests and activities of the primary alcoholics were carefully explored, and amongst the primary alcoholics it was the rule rather than the exception that primary libido was weak and without sustained drive. The males would frequently relate that they had little interest in female company, and amongst the women sexual frigidity was common. Although alcohol has been blamed as a primary cause of diminution of sexual potency, from the histories obtained from our group this did not apply, since sexual interest appeared low from early puberty although there were in some cases some desultory experimentation which was not sustained.

Amongst the reactive group of alcoholics there was often marked sexual drive, frequently associated with feelings of guilt and anxiety concerning these activities.

#### DISCUSSION

One prominent fact of our studies which appeared most impressive was the non-acceptance of a "father figure" by our primary alcoholics. This fact might be given stronger credence when one considers that amongst Jews (in whose culture both religious and ethnic the father of the family commands authority and respect) a remarkably low incidence of alcoholism is present. This is perhaps of greater interest when we consider that the consumption of alcoholic beverages is associated with religious ritual and commences at quite an early age,<sup>3</sup> and is encouraged so that few Jews, especially of the orthodox type, are abstainers, yet alcoholism amongst them is virtually non-existent. The significance of this might be further bolstered in considering that amongst the Chinese culture where the father figure is also of paramount importance, including also the associated ancestor worship, alcoholics are exceedingly rare, although alcoholic beverages are consumed from a very early age.

It would appear, therefore, that restrictive practices regarding alcoholic consumption are not of necessity a suitable solution towards eradicating alcoholism and indeed may further augment an already heavy Oedipal burden in the alcoholic. Further, early introduction to alcohol would appear to have little etiological significance in the development of the alcoholic.

There are undoubtedly grounds for speculation in considering whether or not the present disintegration of the home as the individual's central nucleus and the substitution of the father-figure by schools, and their extra-activities, clubs, and ultimately the state as the divided realms of authority may not represent a basic etiological factor in the formation of the alcoholic.

It is not without interest to note that Alcoholics Anonymous,<sup>4</sup> an organization which has proven of marked success in dealing with alcoholics, have as their preliminary "12 steps" six which incorporate the belief and acceptance of God (the father) as the one most likely to effect their cure. In discussions with many members of that organization we have gained the information that the greatest obstacle to overcome by most alcoholics are these steps acknowledging and accepting God (the father symbol) as the power most likely to help them.

In our clinical experience we have found that

until the Oedipal conflict may be resolved and a father figure firmly incorporated into the super-ego the possibilities of "cure" of the primary alcoholic are very remote.

#### SUMMARY

1. Our present day culture encourages the individual to solve his conflicts by resorting to alcohol.

2. Alcoholics may be divided into two main groups. The primary alcoholic whose personality pattern shows little inner resources and an unresolved Oedipal conflict, and secondary or reactive alcoholics who show many cardinal symptoms of neurosis.

3. Primary alcoholics respond most favourably to group therapy. Reactive alcoholics request and respond best to individual sessions.

4. Marked risks (suicide) are incurred in

using drugs (Disulfiram) which restrict drinking for reactive alcoholics.

5. Cultural groups which have traditional acceptance of a central "father figure" show minimal incidence of alcoholism, although abstainers are rare.

6. Alcoholics Anonymous incorporates the "father figure" (the acceptance of God) as a means of furthering cure. This acceptance is encouraged early on in the membership.

The writer would like to thank Dr. B. J. Bolin, Ph.D., Clinical Psychologist at the Western State Hospital, Kentucky, for his help in compiling the psychological data.

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#### THE SURGICAL TREATMENT OF MITRAL STENOSIS\*

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THE INTRODUCTION of a successful surgical treatment for what was considered an incurable condition such as mitral stenosis is a cheering advance in our knowledge. Early efforts to relieve mitral stenosis failed because the procedure which was done to relieve the stenosis caused a marked mitral regurgitation which was usually fatal. Bailey<sup>1</sup> popularized the present auricular approach to the mitral valve and he was first to advise that the fused commissure be opened by simple cutting. This allows separation of the two valve leaflets without removal of a section of valve. The subsequent development of this operation has been largely the result of the early work of Bailey and Harkens<sup>2</sup> and their co-workers.

The rationale of this technique is based on a better knowledge of the mechanics of the mitral

valve and the intimate gross pathology of mitral stenosis. Harkens pointed out that the large aortic or anterior cusp of the mitral valve, lying as it does between the aorta and left atrium, apparently acts as a baffle. When the ventricle contracts, the blood is forced up and on hitting the anterior cusp of the mitral valve is diverted into the aorta. It is obvious then that any cut or split should not enter the anterior cusp or serious regurgitation may ensue. Bailey also demonstrated that the valve next to its attachment to the valve ring is often soft and pliable in spite of advanced changes in the free margin. Thus if the commissure is accurately reopened, it may allow reasonable movement of the valve leaflet.

It is not proposed in this article to outline the history of this operation or review the several excellent reports of the results of surgery which are available in the literature. This report presents the results of surgical treatment in 65 patients with a more detailed follow-up and analysis in the first 35.

#### INVESTIGATION

Certain information must be obtained, in order to decide whether a patient is a suitable candidate for the operation. A history and careful

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physical examination are done. The heart is examined under the fluoroscope to determine the size of the various chambers; a barium swallow is always given in order to determine the size of the left auricle and its movement in systole. Cardiac catheterization has been done in 19 patients. The information gained has not been very helpful in deciding whether or not a patient will be benefited by operation; it is not an essential part of the investigation. However, if associated cardiac defects, such as an inter-auricular septal defect, are suspected it should be done. When the decision has been made to operate, the patient is observed for a few days in hospital, to exclude rheumatic activity. This is done by observation of the temperature chart, the sedimentation rate, and the white blood count.

Thus the necessary investigation is simple and is really just that done by the cardiologist on any patient with heart disease. Since the surgeon must rely upon his medical colleagues for the selection of cases, success will only be achieved by their close co-operation.

#### SELECTION OF CASES

To date, our experience has shown that a certain type of patient can be operated upon with little risk and with remarkable improvement. The characteristics of this ideal patient are: (1) Clinical proof of mitral stenosis. (2) A definite disability due to pulmonary congestion. This should be quite marked or it should have progressed in the two years prior to operation. This disability manifests itself in one or more of the following ways: (a) marked shortness of breath on exertion—usually one flight of stairs, or one block on the level at an ordinary rate; (b) attacks of pulmonary oedema. Two patients have died of acute pulmonary oedema while awaiting operation. Thus it is felt that one attack of acute pulmonary oedema in a patient with mitral stenosis is sufficient disability to warrant taking the risk of operation; (c) repeated hæmoptysis, especially if massive. (3) Absence of other important diseases of the heart, *e.g.* mitral regurgitation, aortic valvular disease, or active rheumatic myocarditis. (4) Absence of chronic right heart failure.

There is now definite evidence that patients of this type can be greatly benefited by operation. However one sees many patients that deviate from this pattern or are further along the

course of their disease and who also show marked improvement from operation. It is most difficult to know where to draw the line, but with increasing experience actual selection has departed somewhat from this ideal.

With this ideal in our minds, let us now consider the significance of certain findings on investigation of these patients, in relation to the decision to operate.

#### A. GENERAL CONSIDERATIONS

The opinions expressed here are the result of an analysis of the first 35 cases operated upon with a follow-up of from six months to three years.

1. *Age.*—The age of this group of patients varied from seventeen to fifty-two years, and seven of the thirty-five cases were forty years of age or older. Age, at least in the range given, does not appear to be an important consideration. Rather it is the severity of the heart disease which adds to the seriousness of the operative risk.

2. *A history of right heart failure.*—Persistent right heart failure has to date been regarded as a contraindication to operation. A history of moderate right heart failure, but with the patient failure free at the time of operation does not preclude a good result. Patients with a history of only mild failure did well. Several have had persisting large liver.

Seven of the first thirty-five patients had had moderate to severe right heart failure, though they were failure free at the time of operation. We feel that patients in this group run a greater risk and have a somewhat reduced chance of being improved. They should be considered candidates for operation, however.

3. *A history of systemic embolism.*—Four patients in the first 35 had had systemic emboli at some time. In two of these cases a thrombus was found in the auricle at operation, and was removed before attempting to open the valve. In three other patients, with no history of systemic embolus, clot was found in the auricle. None of the five patients who had clot recognized in the auricle at the time of operation have had embolism following operation.

Stagnation of blood proximal to the stenosed mitral orifice predisposes to the formation of thrombus in the atrium and its appendage. This is the usual source of systemic emboli in mitral

stenosis. A successful operation will remove the thrombus and open up the mitral valve relieving the stagnation. In addition the appendage is amputated, removing a cul de sac where future clots might form. Thus as others have pointed out, this should be an effective approach to the problem of repeated emboli in mitral stenosis.

4. *Pregnancy.*—Five patients have been operated on in the first trimester of pregnancy. These were patients in whom the risk of continuing the pregnancy was considerable, the termination of pregnancy would ordinarily have been advised. Two of these are included in the first 35 patients, who have been followed long enough for the early effects of the operation to be assessed. Both patients progressed to full term and had a normal delivery. One had a pulmonary embolus nine days post partum, but has apparently recovered completely. The question of the optimum time to operate on such patients has been considered with Dr. Leslie Watt, of the Department of Obstetrics and Gynaecology. It was finally decided that as a general rule operation should be done as early as possible in pregnancy so that the patient would be well recovered from the operation by the time pregnancy imposed a load on the heart.

5. *Evidence of active rheumatism.*—In view of Bland's<sup>3</sup> experience, we have avoided operating upon patients with evidence of active rheumatism—i.e., fever, elevation of white blood count or sedimentation rate. It is believed that all evidence of activity should have been absent for four to six months before operation is undertaken.

#### B. FINDINGS ON AUSCULTATION

1. *Auricular fibrillation.*—Thirteen patients of the 35 studied were fibrillating at the time of operation. Although this is usually a sign of advanced disease, it does not influence the decision to operate. The results of operation have not apparently been prejudiced by the presence of auricular fibrillation.

2. *The mitral diastolic murmur.*—All cases operated upon have had a mitral diastolic murmur. Marked mitral stenosis, with a good result following surgery has been seen four times in the presence of a mitral diastolic murmur which was so soft that it was difficult to hear. Thus the loudness of the mitral diastolic murmur is not correlated with the degree of stenosis.

Similarly we have seen several patients who have had very loud mitral diastolic murmurs postoperatively in whom gratifying clinical improvement has occurred.

3. *Mitral systolic murmur.*—Mitral regurgitation is hard to diagnose clinically. At operation the surgeon, with his finger lying just above the mitral orifice, assesses the degree of regurgitation by feeling the regurgitant flow. It has proved interesting to correlate the palpable degree of regurgitation and the intensity of the mitral systolic murmur. Seven of the group of 35 had moderate or marked mitral regurgitation noted at operation. Six of the seven had mitral systolic murmurs of grade ii to grade iv (Levine) intensity. In one patient no mitral systolic murmur was present preoperatively. There have been no patients who have had loud systolic murmurs who have not had mitral regurgitation felt at operation. Thus the presence of a loud mitral systolic murmur correlates well with the finding of mitral regurgitation although the degree of loudness does not necessarily vary with the degree of regurgitation. It would appear that the absence of a mitral systolic murmur does not exclude significant regurgitation.

It is felt that the presence of a mitral systolic murmur, even though loud, in a patient with mitral stenosis, does not mean that a good result will not be obtained. It does make a good result less certain. We have delayed operation in a number of cases, in which it was felt that mitral regurgitation was the chief cause of the disability. It is hoped that these patients will be able to carry on reasonably well for the time being, and that in the next year or two a more satisfactory procedure may be designed to correct regurgitation.

4. *Aortic diastolic murmurs.*—Fourteen of the first 35 patients had soft blowing diastolic murmurs along the left sternal border. None of these patients had left ventricular hypertrophy, as shown under the fluoroscope or by electrocardiogram. None had a wide pulse pressure. These murmurs were due either to minimal aortic regurgitation or to pulmonary incompetence, a not unexpected result of high pulmonary arterial pressure. Patients with this type of murmur did just as well as those without it. There appears to be no evidence that a diastolic murmur along the left sternal border, unaccompanied by a big left ventricle or a wide pulse

pressure will in any way adversely affect the result of the operation.

5. *Aortic systolic murmurs.*—Two patients with loud rough aortic systolic murmurs transmitted up into the neck have been operated on. In both these patients the history, the size and shape of the heart, and the electrocardiogram, suggested that mitral stenosis was the important lesion. Both patients were severely disabled, and in chronic failure. They were done after we had convinced ourselves of the value of the operation in the ideal case and were exploring its further possibilities. One patient survived the operation, and is no worse, although it is hard to convince ourselves that she is much better. The other patient, a girl aged 26, had a valve that was so completely calcified that it was impossible to relieve her stenosis. She died about four days after the operation, and post-mortem showed a very severe aortic stenosis as well as mitral stenosis.

Thus though our experience with this situation is small, it is not particularly happy, and we feel that concomitant evidence on auscultation of aortic stenosis probably means that a good result will not be obtained.

#### C. FINDINGS ON FLUOROSCOPY

1. *Size of the heart.*—One of our patients with a cardiothoracic ratio of 72% has had an excellent functional result following surgery. Thus if other factors are favourable, moderate enlargement does not exclude a patient as a candidate for surgery.

2. *Left ventricular enlargement.*—We have operated on no patients with significant left ventricular enlargement. Mitral stenosis does not cause left ventricular enlargement. Thus the presence of left ventricular enlargement is evidence of important heart disease other than mitral stenosis.

3. *Systolic expansion of the left auricle.*—So far we have not been able to show a correlation between a systolic expansion of the left auricle observed in the right anterior oblique position with barium in the oesophagus and the presence at operation of mitral regurgitation. It is hard to distinguish systolic expansion from a movement of the whole heart with systole. People with marked pulsation have had no palpable regurgitation and people with marked regurgitation at operation have had no visible pulsation.

Further study is being made of this sign and it may be that when one can be perfectly satisfied that there is a definite and marked expansive pulsation of the left auricle in more than one view that predominant mitral regurgitation will be found at operation.

4. *Size of the left auricle.*—Marked mitral regurgitation has been seen with only slight enlargement of the left auricle. However the majority have large left auricles. No patients have been operated upon with giant left auricles so we have no comment to make on the relationship of great enlargement of the left auricle and mitral regurgitation.

5. *Aneurysmal dilatation of the pulmonary artery.*—One patient aged 36 (Case 31) had aneurysmal dilatation of the left pulmonary artery. She died following operation. Post mortem showed occlusion of the main pulmonary arteries on each side, the result of previous thrombosis or embolism. She also had an old cardiac infarct with marked coronary atherosclerosis. She apparently suffered from impaired pulmonary function as well as mitral stenosis. Thus we think the findings of a very large pulmonary artery in future would bear more careful investigation.

#### D. ELECTROCARDIOGRAMS

Fifty per cent had right axis deviation and some evidence of right ventricular hypertrophy. The remainder had normal electrical axis and none had left ventricular hypertrophy. Three patients had abnormally tall RV5 and deep SVI, the sum of the two being greater than 35 mm. Two of these patients had only mitral stenosis and no evidence of left ventricular enlargement and have been definitely improved by operation. The other patient was found to have predominant mitral regurgitation but no radiologic evidence of left ventricular enlargement. Further study is being made of the electrocardiograms as an aid in selecting patients for operation. We have not been able to demonstrate as yet any good correlation between the electrocardiographic findings and the results of operation.

#### SURGERY

*Preparation of the patient.*—Patients should all be in as good condition as is possible by medical means before operation is done. If in the course of this preparation digitalis or quinidine

is used it is continued, but these drugs are not started as a routine preparation for operation.

*Anæsthesia.* — The importance of a proper anæsthetic cannot be emphasized too much. It is important that there be complete co-operation between cardiologist, surgeon and anæsthetist. Following a moderate preoperative sedative a light anæsthetic is essential, using a slow induction with the minimum of Pentothal. It is often necessary to induce anæsthesia with the patient propped up or in the sitting position. Most of our patients have been maintained on nitrous oxide and oxygen with a few ounces of ether when necessary. The majority of these patients respond to questions before leaving the operating theatre. Any deeper anæsthesia appears to predispose to

rate. In the absence of uncompensated hæmorrhage, improving the aeration will usually restore the patient to a more normal state. It has become customary to periodically inflate the lung during the operation and we invariably allow a two or three minute period of inflation with full oxygenation before inserting the finger through the auricle.

Thus it is obvious that the anæsthetist should recognize the danger of hypoxia in relation to cardiac function.

#### TECHNIQUE

The patients are operated upon in the right lateral position with incision through the bed of the left fourth rib or through the fourth left intercostal space. Both in-



Fig. 1

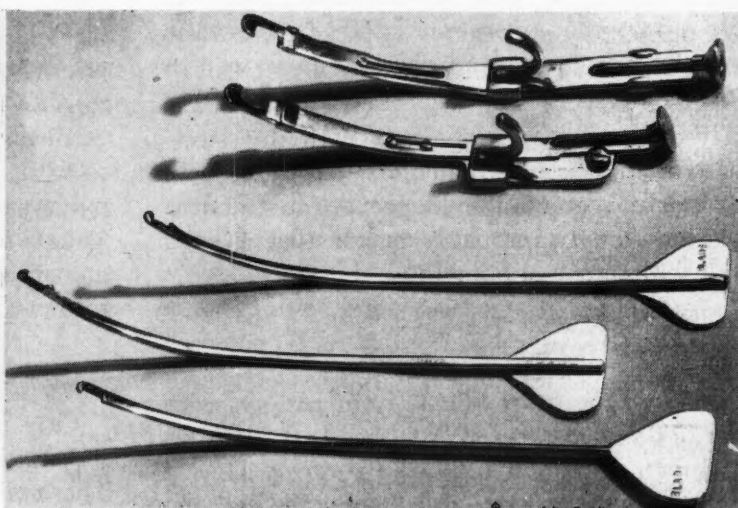


Fig. 2

Fig. 1.—Diagram illustrating the position of the finger during operation. Note the strategic position of the larger aortic cusp of the mitral valve. (Dept. of Art as applied to Medicine, Univ. of Toronto). Fig. 2.—Curved knives and guillotine knives used for cutting the valve commissure. (Made by Eugene Scheerle of J. F. Hartz & Co., Toronto).

a period of hypotension postoperatively which may last for several hours, and to pulmonary complications which may be very serious.

In the early cases during the time that we were developing our anæsthetic technique a Milliken oximeter was used, with the ear attachment, in order to give a constant recording of the arterial oxygen saturation. As has been pointed out by investigators in this field, it is almost impossible for the surgeon and anæsthetist to recognize minor reduction in arterial oxygen saturation with their resultant hypoxia. It was found that when the arterial oxygen saturation was allowed to fall due to inadequate pulmonary ventilation there was usually a coincident fall in blood pressure and a rise in heart

cisions have been used, the latter is in current use. An anterior incision is an easier approach but it is technically difficult to deal with the valve should the heart be rotated with the left auricle in a more posterior position.

The pericardium is opened with care to avoid injury to the phrenic nerve and the auricle and atrium are palpated for evidence of thrombosis and the thrill of regurgitation. Intra-atrial pressure is taken using a saline manometer. The standard technical procedure described by Bailey consisting of one or two purse-string sutures applied around the base of the auricle is used. An auricle clamp is applied to the base of the auricle, incision made into the tip of the auricle and a search made for further evidence of thrombus. This is often done without the use of a purse-string suture. The finger is inserted at the same time as the auricle clamp is removed and if necessary the purse-strings are drawn tight by means of a Romel purse-string tightener in order to prevent regurgitation of blood around the finger.

With the exploring finger one assesses the size of the atrium, the presence or absence of regurgitation, the size of the orifice and the pathological state of the valve (Fig. 1).

In the first ten cases that were operated upon a guillotine type of knife was used in the majority in order to cut open a fused valve along the line of the commissure. With experience one becomes more bold however and since then finger fracture has been used in the great majority of the cases with pressure directed along the line of the commissure on either side of the orifice.

Fig. 2 shows the instruments which are in use. Our design of the guillotine knife has changed very little since it was first used three years ago. It is used infrequently. The curved knives are a modification of those used by Harken.

After the valve has been opened sufficiently any change in the degree of regurgitation is noted and the finger is withdrawn with closure of the purse-string suture. The auricle tip is amputated and the cut edge is oversewn with silk. As far as can be detected with the palpating finger, there have been very few cases in which regurgitation was produced when it did not exist before or where it has been increased in degree by cutting or finger fracture. One does not usually expect to lose more than 100 or 150 c.c. of blood, although with a friable auricle and during manipulation of knives in the auricle this manoeuvre can be the source of a great deal of blood loss.

*Atrial pressure.*—Intra-atrial pressures are taken before closing the chest at a time when systemic arterial blood pressure would approximate the previous level. The change in atrial pressure was recorded in 34 of the first 35 cases. In all cases but one the atrial pressure was reduced by operation. The average pressure before operation was 460 mm. water and after was 293 mm. water.

*Blood pressure.*—Of course one would expect a transient or momentary drop in blood pressure to zero with the finger in the valve completely obstructing the circulation. However apart from these transient drops there were only three cases in the first 35 patients surveyed that experienced a fall in systolic pressure below 80 for a significant period of time. Adrenalin-like drugs are seldom used. Procaine to control cardiac arrhythmias is being used less frequently and in smaller doses, particularly in the poor risk patients in order to avoid its depressing effect.

Heparin was given postoperatively in the first four cases but since then has only been used with special indications. Probably the greatest technical difficulty lies in safely entering the atrium. The auricular appendage may be friable, small, divided by a deep "waist" or actually absent, requiring direct entry into the atrium in the face of a high intra-atrial pressure. Evacuation of a thrombus is not without some risk.

*Auricular thrombus.*—Seven patients in the total series were found to have thrombus in the auricle at operation. All these patients had auricular fibrillation. In six patients this

thrombus was removed by opening the auricle before application of the auricular clamps as it was felt that the clamp might amputate a piece of thrombus and liberate an embolus. The auricle was opened and the thrombus gradually eased out of the opening with a resultant gush of blood which carried the remainder of the thrombus out with it. At the appropriate time the auricle clamp was applied and the operation was proceeded with as previously described. In one patient the thrombus extended into the atrium and opening the auricle did not produce bleeding. In this patient the index finger was used to burrow a hole through the very thick and firm thrombus until free flowing blood was encountered whereupon the valve was identified and opened. During all these manoeuvres the anaesthetist applied intermittent bilateral manual pressure upon the carotid arteries.

*Pathology.*—No detailed description of the pathological findings encountered in the mitral valve will be attempted. The valve leaflets may be soft and pliable and they may be split open by the pressure of the finger with the greatest of ease, producing what would appear to be relatively normal valvular action. In ten of the first 35 patients surveyed, varying amounts of calcium were encountered in the valves. The presence of calcium plaques or a ridge of calcium along the commissure does not prevent the commissure from being opened with finger pressure. One often obtains surprisingly good valve action, once the commissures are open, in spite of the presence of calcium. Thick calcium plaques or gross involvement of the papillary muscles and chordæ, of course, limit the size of the opening that can be obtained by either fracture or cutting, and of course restrict the resultant movement of the valve leaflets.

In the majority of cases the opening was eccentrically placed with a longer fused lateral commissure. In the first 35 cases, six had moderate to marked mitral regurgitation preoperatively. Three of these were interesting in that they had a firm, shrivelled-up posterior cusp represented by a thick ridge and a relatively normal soft anterior cusp with only moderate stenosis.

*Cardiac resuscitation.*—It should be the responsibility of surgeons doing cardiac surgery to understand the problem of resuscitation from cardiac arrest. This includes a knowledge of its prevention and the technique of cardiac mas-

sage with the proper use of intracardiac drugs. An electrical defibrillator should be available which will convert a ventricular fibrillation back to regular rhythm or standstill. There may be a use for the electrical artificial pacemaker designed in the Department of Surgery<sup>4</sup> for use in cardiac standstill. A combined stimulator-defibrillator unit has been available in our operating room for two years.

Only one case of cardiac arrest has occurred in the 65 cases. This patient's heart stopped three times during the operation for periods of three, five and twelve minutes representing a total period of twenty minutes' arrest. Cardiac massage was used. The patient survived with no apparent mental change, although he died one week later of a cerebral embolus.

#### RESULTS

Sixty-five patients have been operated upon by one of us (W.G.B.) for mitral stenosis. The first 35 patients have been followed for a period of six months to three years and all have been examined by the authors. There were four deaths in this group. The remaining 31 patients have all been improved by the operation. There were no exploratory thoracotomies. All operations were completed.

*Ideal cases.*—Sixteen of the 35 cases were considered, preoperatively, as "ideal" candidates for operation (see selection of cases). There were no deaths in this group. Twelve of the 16 or 75% have been given grade A rating, which means they are asymptomatic and are able to carry on a normal life. They are able to do ordinary housework, or an equivalent occupation. They enjoy normal social activities and require no treatment except possibly digitalis to control auricular fibrillation or a maintenance dose of quinidine.

The remaining four are group B rating. They are all considerably improved but have some symptoms and may require some treatment. Some are gainfully employed, but others have not yet returned to serious work.

One-half of these patients had a diastolic murmur down the left border of the sternum and several had moderate cardiac enlargement which would suggest that these are not unfavourable features. Some of these ideal cases were rather severely disabled. They all represent a very happy group.

*Less favourable cases.*—There were 19 classified as such. These were cases with unfavourable features such as right heart failure, mitral regurgitation, auricular fibrillation, peripheral emboli and the majority of these had moderate to marked cardiac enlargement. Some of these were chronic invalids with cyanosis and an arterial oxygen saturation as low as 83% at rest. The four deaths occurred in this less favourable group. As stated above the remainder have been improved.

Six, or about one-half, have been given Grade A rating with no symptoms and the other five were rated as Grade B. Twelve of the 19 were patients in whom there was a combination of two or more unfavourable features present.

In order to appreciate the degree of improvement in these patients and to illustrate some of the points discussed, three cases are briefly reported.

The following was the first patient operated upon during pregnancy. In view of her history it was reasonable to expect that the load of pregnancy would aggravate her condition greatly. Ordinarily therapeutic abortion would likely have been recommended. With a good result from the operation she was able to carry through her pregnancy quite normally and gave birth to a healthy child.

#### CASE 13

Mrs. M.P., age 30, was well until ten years before operation when she began to notice a little decrease in her exercise tolerance. Five years ago, during a pregnancy, she had an attack of acute pulmonary oedema coming on after strenuous exertion. In the past four years her exercise tolerance has decreased so that she was short of breath on one block or after one flight of stairs slowly. She had several bouts of slight hæmoptysis in the past few years. She had no orthopnoea or nocturnal dyspnoea.

The heart was slightly enlarged, the rhythm was regular and she had a loud mitral diastolic and pre-systolic murmur.

At the time of operation, on February 25, 1952, she was two months pregnant. A marked mitral stenosis was found and the commissures were split with a good functional result obtained. When about six months pregnant she forgot her disability, ran for a street car and to her surprise found that she was not short of breath. The patient carried through her pregnancy without any symptoms referable to her heart, delivering a healthy baby boy on September 25, 1952.

The following illustrates the type of result that can be obtained in the "ideal" patient.

#### CASE 8

A thirty year old woman with a history of rheumatic fever at the age of ten years. In good health until the

age of sixteen when she had her first pregnancy. In the last month of this pregnancy she coughed up two to four cups of bright red blood. In the next two years she had two further pregnancies and during them she had marked decrease in exercise tolerance and further massive hæmoptysis, one requiring hospitalization and transfusion. At the age of twenty-two, during her fourth pregnancy she had a few small hæmoptyses but was much more dyspnoic than on previous occasions. In the seven years before operation her disability became progressively greater so that she was unable to do her housework, could not climb one flight of stairs or walk more than one block. Slight exertion led to severe paroxysms of coughing, dyspnoea and frequent hæmoptysis. She became orthopnoic and had several attacks of nocturnal dyspnoea. Her husband stated that he often had to carry her up small hills.

At operation, on September 14, 1951, the mitral orifice was found to be a "fish mouth" opening 1.0 x 0.75 cm. The commissures had to be cut but a good result was obtained.

Immediately after the operation she noted marked improvement in her breathing. She is now able to do all her housework and care for four school aged children. She can walk an unlimited distance and goes up and down stairs with ease. In August, 1952, she had a respiratory infection and after a severe paroxysm of coughing she brought up about one mouthful of blood. For six months she has been working in a button factory from eight a.m. to five-thirty p.m., in addition to her housework.

She has not been taking digitalis and has not restricted her salt since the operation.

The following report illustrates a good functional result in a patient who was severely disabled for one year before operation. She was cyanosed at rest and had auricular fibrillation, a very large heart, and had an embolic episode shortly before operation. In spite of these unfavourable features her immediate result is gratifying.

#### CASE 54

Mrs. A.M., age 44, had no history of rheumatic fever. Eight years before operation she began to notice a decrease in exercise tolerance which she described as exhaustion. She carried on with a moderate disability until one year before operation when she became much worse, noticing dyspnoea on one flight of stairs and slight grades. She began using 3 or 4 pillows when sleeping and often slept sitting up in a chair. Eleven months before operation she was put on digitalis and salt restriction for the first time and given mercurial diuretics. On this regimen she improved but only temporarily. She had two admissions to hospital in the 6 month period before operation, on the first of which she required oxygen therapy for a few days. She was almost completely bedridden for 2 or 3 months prior to operation. While in hospital awaiting operation she had a mesenteric embolus which cleared on conservative therapy. Examination revealed a thin cyanosed middle aged woman who became dyspnoic on moving in bed. She had no evidence of right heart failure. She had auricular fibrillation. There was a moderately loud mitral diastolic rumble and a grade ii mitral systolic murmur. The cardiac thoracic ratio was 65.5%. The arterial oxygen saturation was low (86.5%).

Operation revealed a stenosed, calcified valve with moderate regurgitation which was not increased after splitting the valve. When contacted 4 months after operation this woman was very much improved. She had

gained about 18 lb. and was doing light housework. She was able to walk at least 6 blocks and climb one flight of stairs without dyspnoea, and does not require diuretics.

*Postoperative course.* — The postoperative management once again requires team effort. The majority of the patients have had a very satisfactory course after operation. Depending on their preoperative state they are usually up by the third or fourth day and home in two or three weeks. In the first few postoperative days they often volunteer that they have lost the sense of tightness which existed before in their retrosternal region, or that they can now lie flat in comfort, or they breathe more easily in spite of a large thoracotomy incision.

A summary of the postoperative complications is given in the following table.

TABLE I.

POSTOPERATIVE COMPLICATIONS FIRST THIRTY-FIVE CASES		
Complications	Number of cases	Result
Cardiac tamponade	1	fatal
Auricular fibrillation (previously regular)	3	all reverted to normal with quinidine
Embolism		
1. Cerebral	2	1 fatal 1 transient hemiparesis
2. Peripheral	0	
3. Pulmonary	2	full recovery
Collapse of lung	2	1 died of mitral regurgitation 1 recovery
Paralysis of diaphragm	2	transient

No chest drainage has been used since the tenth case and most of the subsequent cases have required one chest aspiration, a few more than one. Due to the associated pulmonary congestion, those patients are carefully managed to avoid respiration complications.

One patient demonstrated the signs and symptoms of an aortic embolus immediately after operation. Within eighteen hours ankle pulses were present on both sides with normal circulation. Such phenomena are difficult to explain.

*Mortality.* — There were six deaths in the total series of 65 cases. Two of the deaths occurred in the first three cases. Both of these cases had advanced heart disease and the cause of death was partly technical in nature. There have been

no deaths in the last 22 cases. The following table gives in outline the cause of death.

TABLE II.

DEATHS			
Case No.	Cause	Time	Remarks
2	Cerebral embolism	7th day	Tear in auricle with thrombosis.
3	Hæmopericardium and cardiac tamponade	1st day	Heparin used. Bleeding from sutured stump of auricle.
18	Mitral regurgitation	1st day	Associated massive collapse right lung.
31	Pulmonary insufficiency	1st day	Unrecognized extensive pulmonary fibrosis and old cardiac infarction (female, age 36).
38	Progressive cardiac incompetence	During operation	Extreme debility, complete invalid, two years with cyanosis at rest.
43	Progressive cardiac incompetence	6th day	Aortic stenosis and regurgitation. Unable to open mitral valve due to solid calcium.

The term progressive cardiac incompetence is used here to describe a progressive reduction in power of cardiac contraction with failure to maintain adequate circulation. Thus we are differentiating this mode of death from sudden cardiac arrest.

#### DISCUSSION

One of the first questions which is asked regarding this operation is: "What prevents the valve leaflets from fusing together again". To answer this one can only say that when the commissure of a soft pliable valve is opened by finger fracture or cutting, it commences to function with such vigour that it is difficult to conceive that the stenosis would reform unless the valve became inflamed with a recurrence of the rheumatic process. In the firm, thickened or markedly calcified valve with restricted movement after commissurotomy it is possible that part of the new commissure may re-fuse. The outlook appears favourable however for with a follow-up extending to three years these patients have retained their initial improvement, which would suggest that the new opening remains patent. We have had no deaths later than one week postoperatively and accordingly no opportunity to examine the valve at post mortem so this series does not throw any light on the problem.

Of course there is no way of foretelling the degree of improvement to be expected from the operation. This depends on the pathology of the valve and the resultant functional efficiency assessed by digital palpation after the commissure has been opened. Age is of little help, for one may encounter a firm, immobile or grossly calcified valve in any age group and in both the "ideal" and "less favourable" groups of cases. The assessment by the operator of the resultant efficiency of the valve usually correlates well with the fall in left atrial pressure as recorded at operation, unless significant mitral regurgitation is present. Using a simple manometer to record mean pressures, one finds that the clinical improvement may far exceed that expected from the fall in atrial pressure when mitral regurgitation is present. This complication reduces the chances of improvement that may be expected. The fact that there have been no late deaths would appear to confirm our impression that there have been no cases in which regurgitation has been produced which is severe enough to overcome the favourable effect of relieving the stenosis.

There have been four deaths in patients awaiting operation. Almost as many as died in the postoperative period. Three of these were due to acute pulmonary oedema. One was precipitated by the excitement of being taken to the operating room. Operation was deferred and the patient died that day. Since then the policy has been to induce anaesthesia immediately if these signs develop on arrival at the operating suite.

One of the most remarkable results of the operation, particularly in patients with a long standing disability, is the personality change which they often undergo. They become more cheerful and sociable with a new zest for living.

#### SUMMARY AND CONCLUSIONS

1. Sixty-five patients with mitral stenosis have been operated upon. An analysis has been made of the first 35 cases with a follow-up from six months to three years.

2. All patients had had a definite disability, usually progressive. This series includes patients in the terminal stages of their disease who had been complete invalids for several years with constant cyanosis at rest.

3. There have been six deaths in the 65 operations. With a follow-up extending to three years

there have been no deaths later than the seventh postoperative day.

4. In the first 35 cases done there were four deaths. The remaining cases have all been improved.

5. In our experience, a certain ideal type of patient can be recognized, in whom a good result from operation can be expected. There have been no deaths in this group.

6. The effect of certain unfavourable features upon the results has been discussed.

7. In many cases the degree of improvement is remarkable. The ultimate result correlates well with the functional efficiency of the valve as judged by the palpating finger after commissurotomy or finger fracture.

8. Details of the operative procedure and post-operative complications are presented.

9. Evidence is presented which would suggest that the valve once opened does not re-fuse to

any appreciable degree. The production of significant mitral regurgitation by the operation has not been a problem.

10. Our present views based on this study will no doubt be altered in time. The indications for the operation are constantly extended and the results have continued to be gratifying.

This group of cases were selected largely by members of the medical staffs at the Toronto General Hospital including the Wellesley division and Sunnybrook Hospital (D.V.A.). Some suitable cases were referred by physicians in other hospitals and other centres. The medical collaborators have examined almost all cases and carried out the recording, follow-up and analysis of results.

Since this report was submitted a total of 124 cases have been operated upon with 10 deaths and continuing satisfactory results.

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## ANÆSTHESIA FOR EMERGENCY SURGERY\*

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AT LEAST ONCE DAILY an emergency case is admitted to most community hospitals. In some of these cases the anæsthetic risk involved is more hazardous than is the surgery. It is, therefore, important that a staff anæsthetist or anæsthetic intern should see the patient as soon after admission as possible.

As one gets a bit older, the approach to this problem undergoes considerable revision. Early in our career, we are concerned mainly with the agent and the choice of technique. As we become more experienced, the selection of the agent assumes secondary importance as we consider first the possible hazards to the patient in respect to his physical condition. In this respect Mushin uses as an analogy the problem encountered in acute intestinal obstruction, "Of what use is the selection of the agent, if the stomach has not first been intubated and emptied of faecal vomitus?"

In emergency surgery, the dangers lie not so much in the agents used as in the possible neglect to consider the several types of incidental hazards which must be overcome in order to assure safe emergency care. It is, therefore, important that the anæsthetist should be briefed by the surgeon as to the extent of the patient's injuries and should make personal investigations for his own benefit as well. He should determine the ability of the patient to co-operate and the degree of mental clarity, his reactivity to stimuli, procure information as to the amount and type of sedation he has received, consider the potential difficulties in maintenance of the patient's airway during anæsthesia, assess the respiratory function, and decide as to whether or not the patient has a full stomach.

In the case of the unconscious patient, or the patient in coma, the others in attendance are often glad to have the anæsthetist take over immediately. These patients usually suffer from some degree of respiratory obstruction, the immediate correction of which prevents serious hypoxia or pulmonary oedema. Immediate correction of the airway, by pulling the tongue forward, aspiration of blood or mucus from the pharynx, inserting a pharyngeal airway and commencing oxygen therapy with a BLB mask, is imperative. In deeply comatose patients, when

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laryngeal reflexes are absent or sluggish the insertion of an endotracheal airway, either through the mouth or nose, is an invaluable method of protecting the patient from pulmonary oedema. This treatment is easy and the patient is protected from aspiration, oxygenation is assured, and a means is provided of easily clearing the tracheo-bronchial tree of mucus and secretions. If artificial respiration is necessary a patent airway is thus assured. There is ample experience to prove that an endotracheal tube may be left in place for days without causing traumatic complications.

If the patient requires resuscitation from shock, the anaesthetist will want to be consulted as to the optimum time to operate. If he is wise, he won't be talked into giving an anaesthetic just because the patient's blood pressure has risen above 90, and the pulse pressure is improving. These numerical rules of thumb are misleading. The patient can have a steadily increasing blood pressure in the presence of maximal sympathetic compensatory vasoconstriction. Surgery results in further trauma, anaesthesia antagonizes the sympathetic protective mechanism and the patient's condition may deteriorate. In the absence of evidence of continuing uncontrollable haemorrhage, surgery should be delayed until the blood pressure is steadily rising, the pulse pressure is improving, the pulse rate is becoming slower, and the patient's peripheral skin colour is returning to normal, the capillary refilling time is active, and the skin is warm. These signs indicate that the autonomic nervous system is relaxing its protective function and the period of maximum stress is over.

Should the anaesthetist insist on the use of vasopressor drugs in cases of haemorrhagic shock not responding to intravenous therapy? The use of intra-arterial transfusion in these cases seems much more rational, and experience is proving it to be more effective.

What anaesthetic agents should we use? Let us answer this after saying we must do everything possible to improve chances of viability by assuring adequate oxygenation through a clear airway. The best agents for this purpose will allow rapid induction and recovery and administration with a high percentage of oxygen and provide minimal embarrassment of the autonomic compensatory mechanism. As Brown and McIntosh have pointed out, all patients in shock suffer from a decrease in meta-

bolic activity and great care must be taken to avoid over-dosage with any agent. The same is true of premedicant drugs which must be used very conservatively.

Spinal anaesthesia has no place in the treatment of patients recovering from shock. A complete sympathetic block occurs to, at least, the level of sensory anaesthesia. The result is a loss of the protective peripheral constrictive effect below that level, with maximal muscular relaxation. The result is pooling in the peripheral vessels, and diminished venous return. The higher the anaesthetic level, the more profound this effect will be, until at the level of the 4th thoracic segment, which is required for upper abdominal procedures, there is loss of splanchnic innervation, loss of the splenic contractile mechanism, and diminished aeration from intercostal paralysis.

Second plane ether anaesthesia is safe and reliable. Its safety depends on the skill of the administrator and his ability to provide a smooth induction without hypoxia incidental to vomiting or laryngeal stridor. We must, also, avoid third plane anaesthesia with resultant respiratory depression, profound muscular relaxation and peripheral vasodilatation resulting in decreased circulatory efficiency.

Cyclopropane is probably the best agent, when available. It assures adequate oxygenation, does not interfere with the autonomic nervous system, and combined with one of the relaxant drugs gives optimal working conditions for the surgeon.

Pentothal sodium has a powerful centrally depressing effect on the respiratory centre. It is also a peripheral vasodilator, and, for that reason, is contra-indicated except in small doses for induction.

Local and regional nerve block anaesthesia both have a definite place in anaesthesia for patients in shock.

Whenever feasible, these patients should be prepared and anaesthetized in the Trendelenburg position.

#### THE FULL STOMACH

In retrospect, I would say that poor judgment and clumsy management of patients with a full stomach have been responsible for most of my mistakes in emergency anaesthesia, during the past ten years. No personal priority is claimed.

The results of these mistakes are sporadic, subjugated by remorse, and seldom appear in the literature. Merrill and Hingson reviewed the literature, from the time of Gwathmey until 1950, and found records of only 472 cases of aspiration of vomitus and six surgical deaths.

Injuries, soon after a meal, inhibit gastric motility for hours. This is increased by morphine. No type of gastric aspiration will remove solid substances from the stomach. This hazard is an indication for conduction anaesthesia, particularly in robust workmen. Brachial, wrist, and finger blocks for the upper extremity, and low spinal anaesthesia, in the absence of shock, for the lower extremities will diminish this hazard.

Lacking the availability of these, one can only take the precautions. They are:

1. Wait a reasonable time.
2. Premedicate the patient well.
3. A smooth and rapid induction. This is where induction with sodium pentothal is of great value, and induction with irritating ether vapour, a menace.
4. Allow the patient to get light toward the end of surgery.
5. Remove the pharyngeal airway before it can irritate the returning pharyngeal sensitivity.
6. Keep the patient's head down, and have a good pharyngeal suction and a mouth gag handy, until recovery occurs.
7. Never return these patients to the ward in an unconscious state.
8. If foreign substances are accidentally aspirated, immediate bronchoscopy must be resorted to.

#### SITUATIONS ENCOUNTERED

We might consider certain commonly encountered and potentially dangerous anaesthetic situations:

1. *Immediate reduction of minor fractures.*—Often surgeons will insist that some fractures must be reduced at once. This the anaesthetist must face, but to insist on an open ether anaesthetic, just after supper, for a child with a Colles' fracture to be reduced under fluoroscopy, is just asking for trouble. Aspiration of vomitus, possibility of silent vomiting in the dark, and the explosion hazard are all being blatantly ignored. What is the treatment? Splint the child, send him to bed, premedicate him judiciously with demerol and hyoscine, and return 4 to 5 hours later. Mix up some 1¼ to 2½% Sodium Pentothal, give him a whiff of nitrous oxide so that he won't feel the venipuncture, slip a needle into the vein, and you are all set. Pentothal is much less likely to cause vomiting. 60% nitrous oxide supplement, with 40% oxygen, may be given to keep the Pentothal dosage to a minimum. The administrator should have a small

pocket flashlight handy and keep one hand on the patient's chest during fluoroscopy. With this technique, vomiting almost never occurs. If the youngster is so small that no vein is accessible, the anaesthetist must argue against the use of the fluoroscope and insist on x-rays. Open ether with ethyl chloride or vinethene induction can be used and the child x-rayed after recovery. Another useful and more pleasant method is the use of nitrous oxide and oxygen insufflation with a small amount of trichlorethylene. Recovery is almost immediate.

In adults, most cases of fractures of the arm can be safely and adequately dealt with using Sodium Pentothal. The technique is very simple.

One is often confronted with men requiring anaesthesia for reduction of a fracture of the lower leg. Pentothal will do for most, but the heavy set, emphysematous man who drinks and smokes and coughs has trouble written all over him. These men breathe poorly, Pentothal being a parasympathimetic activator, initiates bronchospasm and the drug usually gives inadequate relaxation. A low spinal anaesthetic, using 10 mgm. of Pontocaine-glucose, is definitely indicated here. Relaxation is adequate, the patient is comfortable, and there is no explosion hazard.

2. *Conditions involving the face and neck.*—Local anaesthesia is, of course, indicated whenever possible. Serious facial injuries will all require endotracheal intubations. Many of these patients will have bleeding into the pharynx. They must be induced in the head-down position. Within recent years, many anaesthetists have advocated intubating these people awake, after preliminary spraying of the pharynx and cords with 1% Pontocaine solution. It is rugged treatment but safe and easy in very small children (these do not need to be sprayed) and co-operative edentulous oldsters. In robust people it is almost impossible, and induction with Pentothal and Cyclopropane probably works best. A relaxant prior to intubation is risky because of the danger of vomiting, as a result of oesophageal relaxation. Extubation should not be performed until the protective reflexes are active.

Pentothal Sodium should not be used for procedures on the side of the neck, in the region of the carotid sinus, because of the risk of cardiac arrest from vagal inhibition.

Ludwig's angina is a subject by itself. The anaesthetic mortality is high. Patients with

trismus precluding intubation, signs of laryngeal oedema, and obstruction should have preliminary tracheotomy before anaesthesia. Cyclopropane through the tracheotomy works well. Mild cases should be intubated because of the hazards of extrinsic pressure.

3. *Burns.*—Another common emergency problem encountered by the anaesthetist is in the management of burns. These patients are usually admitted restless and in pain. Restlessness may be the result of cerebral hypoxia due to shock or deficient respiratory exchange. For pain, adequate analgesia is usually obtainable by the use of intravenous morphine. For adults, in the younger age groups, morphine gr. 1/6, dissolved in 5 c.c. of saline is injected intravenously over a period of 2 to 3 minutes. Deficient peripheral circulation from shock may delay the absorption of subcutaneous morphine. Shock should be treated by whole blood transfusion, and humidified oxygen by mask or nasal catheter will not only benefit the effects of shock but improve the patient's suffering from a deficient respiratory exchange.

Respiratory distress may be due to obstructed airway from foreign material in the pharynx or oedema of the larynx with superimposed pharyngeal tissue destruction. Some of the last mentioned cases will require immediate tracheotomy. Inadequate respiratory excursions may result from drug depression or tight bandages. In these cases, opiates should be avoided and bandages should be loosened. If pulmonary oedema exists, oxygen should be administered preferably under positive pressure of 6 cm. of water. Allen and Slocum decry the use of spinal anaesthesia, Pentothal Sodium, or profound anaesthesia with any drugs, because of the coexistent vasomotor instability from which most of these patients suffer.

For immediate and later debridements and changes of dressings, they advocate the retention of conscious control by the patient, plus analgesia by the administration of nitrous oxide and oxygen commencing with a 75% 25% mixture for 3 minutes, and later varying the concentrations to 60% and 40% and even 50-50 as the patient requires it. Transient loss of consciousness requires an increase in oxygen percentage. Manifestations of pain will require an increase in the nitrous oxide. After establishment of analgesia, a 60-40 mixture may be adequate for a considerable time. When repeated pro-

cedures are necessary, an important advantage of this technique is the lack of interruption of food and fluid intake for periods of hours in patients suffering from dehydration and hypoproteinaemia.

An insufflation or to-and-fro technique is preferable because the use of a circle filter has the disadvantage of too much resistance.

4. *Abdominal emergencies.*—If there is one situation in which our efforts are extremely inadequate, it is in the management of abdominal emergencies in sick children. The ordinary appendectomy or hernia is not much of a problem. We refer rather to acute fulminating appendicitis, with or without perforation, hypertrophic pyloric stenosis, intussusception, volvulus, and intestinal obstruction.

These infants and children are often febrile to the point of hyperthermia, dehydrated, suffering from metabolic acidosis, and haemoconcentration. Their metabolic disturbance adds greatly to the risk of their intra-abdominal condition and they should not be rushed to operation in this condition.

The Boston group have recently materially reduced the mortality in these patients by the adoption of an extremely sensible routine that takes only a few hours. By using antipyretics and intravenous glucose, water and normal saline, they can reduce the fever, replace fluids and chlorides lost through vomiting, with resultant marked improvement in the preoperative condition. Temperature, respirations, and pulse rate are thus reduced prior to surgery. Fluid replacement requirement, in infants, run as high as 100 c.c. per lb. over the 24-hour period.

In dehydrated, older children 30 c.c. per lb. is easily tolerated. Two-thirds of the fluid should be given in the form of dextrose and water, and one-third as normal saline. In cases of persistent vomiting, the saline fraction can be increased. If one is not used to doing infant cut-downs, these fluids can be efficiently administered by the interstitial route after giving the child 1 c.c. of hyaluronidase. As a result, the insults incidental to surgery and anaesthesia are better tolerated. Hyperthermic, convulsive episodes on the table are prevented.

Doesn't it sound sensible? And how long will it take us to learn the lesson?

Open ether is usually the anaesthetic used. It leaves much to be desired, but today it is the

best we have. If fluids and electrolytes have been replaced, and particularly if one has some blood available for transfusion during operation, good treatment is being given despite the ether. There is much controversy as to whether or not these children should be intubated. It has definite advantages, but unless one is experienced in intubating children, it is better to depend on a pharyngeal airway and skill with the open mask technique.

The preoperative replacement of fluids and electrolytes is now routine in adults with intestinal obstruction. These patients must be decompressed with a properly functioning tube and the pulmonary aspiration of faecal gastric contents prevented.

The anaesthetic management of these cases can be greatly simplified by the use of intra-tracheal Cyclopropane supplemented by the new relaxant drug Succinyl-Choline in a 0.1% controllable intravenous drip. The introduction of this drug is the best contribution to anaesthesia in the last five years. It allows safe, controllable anaesthesia and relaxation adequate for the most particular surgeon, without resorting to the hazards of vasomotor depression associated with spinal anaesthesia. Comparable results are obtainable with ether, but only if the administrator is extremely skilful.

The patient with a ruptured hollow viscus

always suffers from a degree of ileus and his stomach should be continually aspirated.

In conclusion, we all periodically face cases of uncontrollable intra-abdominal haemorrhage from ectopic pregnancy or perforating wounds. Despite rapid transfusion of blood, no improvement of shock is noted. The blood pressure does not rise and death is imminent unless the haemorrhage is controlled. The abdominal rigidity and diaphragmatic irritation, caused by free blood, depress respiratory function. Well co-ordinated efforts will save these people. Cyclopropane is the best agent. Induction is prolonged because of the abdominal irritation. As soon as the patient has reached the second plane, administer a relaxant in an apnoeic dose, and control respirations by periodic pressure on the rebreathing bag. As soon as the haemorrhage is controlled, the blood pressure can be expected to begin to rise and the stress is over.

If the source of haemorrhage is inside the bowel, control will be more difficult and one should prepare an intra-arterial transfusion.

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## THE ATAXIC CHILD\*

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ATAXIA BY DEFINITION means failure of muscular co-ordination, and in childhood is most commonly cerebellar in origin. Lesions of the posterior columns such as occur in tabes dorsalis are excessively rare. Sometimes the clumsiness of the mental defective may be mistaken for cerebellar ataxia. Similarly, the muscular weakness resulting from a prolonged and debilitating illness may cause the child to stumble. Ataxia can also occur in the early stages of a polyneuritis, or as a temporary phenomenon with an acute

ear infection. Occasionally, an undiagnosed cerebellar ataxia may be brought out following bed rest for some intercurrent infection. In all such cases, however, the findings in addition to the ataxic gait are usually sufficient to differentiate them. It is with the child whose presenting feature is walking on a wide base with a staggering gait or in whom ataxia leads one to suspect an intracranial lesion that I am chiefly concerned. Such a finding may easily be missed unless the child is made to walk. Often one's detailed examination is carried out with the patient lying, or sitting, with neglect of this simple observation. Yet, this gait alone may be the main consequence of extensive and bizarre lesions in the region of the cerebellum. Frederick Batten<sup>3</sup> classified cerebellar ataxia according to its onset,

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as congenital, acute, and progressive. It is under these headings that illustrative case records are presented.

Little is known of the exact etiology of the congenital ataxias. It is common at the present time to include them amongst a much wider group of cases in which damage to, or failure of development of, the brain has occurred, namely, cerebral palsy. These cases present symptoms and signs from the earliest age which remain the same throughout life. Disturbance of gait and stance is apparent, and there is often ataxia and intention tremor of the arms. Nystagmus is not a feature of the disease.

Cerebellar abscess used to be a common cause of an ataxia of acute onset, though with the advent of antibiotics it has become more rare. Such cases are accompanied by otitis or mastoiditis and signs of infection such as an increased sedimentation rate, fever and leucocytosis. Raised intracranial pressure may be present. Of considerable interest are another group in which ataxia occurs suddenly with measles, chicken-pox or one of the exanthemata. Sometimes there is only a history of some vague febrile illness which has been labelled influenza. The lesion would appear to be in the nature of an encephalitis. As a rule, the prognosis is very good, although the time taken to recover may be many months. One of the earliest cases was recorded by Sir Frederick Taylor in a child aged  $4\frac{1}{2}$  years seen in 1875. Batten,<sup>3</sup> in his paper in 1905, described similar cases and considered them to be vascular in origin, in view of their acute onset. In 1920 Griffith<sup>8</sup> reported four of these cases, and pointed out that although the cerebellar signs may predominate, there are usually symptoms indicating involvement of other parts of the brain, such as unconsciousness, changed mentality, loss of power and active tendon reflexes. He suggested for them the title of cerebro-cerebellar or cerebro-cerebellar-bulbar-encephalitis.

#### CASE 1

I.V. age 2 years, developed a very severe cerebellar ataxia associated with chicken-pox. Recovery was complete within three months.

Apart from generalized convulsions at 8, 10 and 14 months of age, her development had been normal. She had had whooping-cough and measles. She was admitted to the Municipal Fever Hospital on May 24, 1951 with a mild attack of chicken-pox. On May 29, her hands were shaking so much that she could not hold a spoon. The following day she was perfectly quiet while lying in bed. On sitting, her head and arms showed coarse inco-ordinate movements. She was unable to stand without support because of the violent movements of the

whole body. On June 1, she was unco-operative and screaming when approached. No nystagmus. Gait grossly ataxic and coarse violent movements of limbs, trunk and head whenever any voluntary activity was attempted. By June 8, there was considerable tremor of the arms, worse on the right than the left, was present. Lumbar punctures on three occasions showed no increase in cells or protein. An encephalogram on June 18 showed possible moderate diffuse aplasia, or atrophy of the cerebrum, but no evidence of a small cerebellum. E.E.G. revealed no good evidence of asymmetry or focal abnormality. When seen in the out-patient department on August 8 and September 11, there were no neurological signs and the child appeared normal for her age.

#### CASE 2

N.C., aged 2 years, had severe convulsions and fever followed by ataxia which improved slowly.

The onset had been sudden, with fever and convulsions which recurred over a period of 12 hours. She was then listless and irritable with a slight cough. On examination, she lay quietly, and was noticed not to use the right arm as much as the left. This arm was ataxic when she attempted to grasp an object. Neck flexion was full but resisted, and there was a tendency to extend the neck when sitting. She was unable to balance without support when put on her feet. She staggered in all directions with feet widely separated, and if not prevented would have fallen. There was some coarse movement of the trunk and head. The plantar reflexes were extensor. No other neurological signs were present. Lumbar puncture, x-rays of the skull, and an encephalogram were all negative. The E.E.G. showed surprisingly little cortical activity, though this was more in evidence when repeated under sodium seconal. It was thought that the latter put the general pattern more nearly into the normal range. No asymmetry or focal pattern was seen. Improvement occurred slowly over a period of many months.

The progressive ataxias include Friedrich's or allied hereditary conditions. More rarely the juvenile cerebro-macular degenerations may start with cerebellar symptoms, as may Schilder's disease. Platybasia or an Arnold-Chiari deformity commonly shows cerebellar features. Disseminated sclerosis must be exceptionally rare. Neoplasms and tuberculomas are the common causes, though according to figures quoted by Ford the latter constitute only 5% of intracranial tumours as a whole, as against 75% gliomas. Of the gliomas, astrocytoma are twice as common as the more malignant medulloblastomas, and have much longer postoperative survival rate (6 years). The clinical features to which such space-occupying lesions give rise are evidence of increased intracranial pressure, cerebellar signs and signs of pressure on adjacent structures. The following case is an example of the early appearance of an ataxic gait in a child with a very extensive astrocytoma.

#### CASE 3

K.M., aged 20 months, had a history of ataxia and general ill-health for a month prior to admission to the Children's hospital. Part of a large astrocytoma was removed at operation, following which the child died.

This child was referred in from Northern Manitoba on May 17, 1951, with a history of losing weight, poor appetite and cranky for one month. He had a tendency to stumble a lot, and appeared to have difficulty in holding up his head. Several times daily he would lie down when tired, with his neck extended. He would lie like this for periods varying from a few minutes to several hours. He had been investigated locally, and lumbar puncture, x-ray of skull and fundi were found to be normal. His development up to onset of symptoms had been normal. He had walked at 11/12 and always had been a lively, active child. His only illness was bilateral otitis media in March, 1950. Examination revealed a fretful, irritable child. Wt. 23 lb. 10 oz. He gave the appearance of having lost weight, but did not appear unduly sick. Preferred to lie on his side with his head retracted. Lying on his back he kept the knees flexed; neck flexed fully, but the child resisted strongly. The pupils were even and reacted to light. No nystagmus. No ataxia of the arms, but child seemed unsteady on his feet. He was admitted to hospital for investigation as a possible tuber-

ventricle. Biopsy showed an astrocytoma. This child's postoperative course was unsatisfactory, and he died 12 days later. At postmortem, the tumour was seen to arise within the left lateral wall and roof of the 4th ventricle, with prolongations extending through both lateral recesses and the median aperture. It lay in the subarachnoid space on the lateral surface of the cervical cord medulla and pons, bulging over the midline in front of these structures. The bulk of the tumour was greater on the left side than the right. The 9th and 10th cranial nerves on the left were surrounded by tumour extension, and the 7th and 8th nerves were compressed against the under surface of the left inferior cerebellar peduncle. The tumour showed slight attachment to this peduncle and was continuous with an enlarged left cerebellar tonsil. Elsewhere there was a sharp line of cleavage, and the tumour was easily removed en masse—weight 30 gm. (Fig. 2).

Frequently, it is difficult to distinguish cerebellar tumours from lesions in the pons, or



Fig. 1

Fig. 1. (Case 3).—The lateral ventriculogram reveals marked enlargement of the lateral and third ventricles. Considerable gas is present in the fourth ventricle. Arrows mark the tumour outline. Fig. 2. (Case 3).—Cerebellum with extension through left lateral recess removed.



Fig. 2

culous meningitis. Fundoscopic examination showed small vessels and pale discs with slightly blurred margins which appeared elevated. The macula regions were slightly gray. X-rays of chest and skull, blood count, urinalysis and lumbar puncture were all negative. An encephalogram showed no filling. A ventriculogram showed the lateral and 3rd ventricle markedly dilated. The 4th ventricle was large and almost filled by a very large soft tissue mass. Some gas had entered the cisterna magna (Fig. 1). It was concluded that there was obstruction below the 3rd ventricle with a large tumour appearing to originate from the left side but bulging far across to the right of the midline.

On May 29, 1951, a suboccipital craniotomy was performed, and a tumour extending down the cord to the upper border of C.3 was found. The tumour was seen above protruding through the foramen of Magendie. Vermis split and tumour cleaned out, up as far as the aqueduct, which was plugged with a "stopper"-like blob of tumour. The floor of the 4th ventricle cleaned, but bruised over the facial colliculi. The origin of the tumour appeared to be the medial wall of the 4th

supratentorial lesions causing marked increased intracranial pressure. Any of these conditions may produce ataxia of gait which may be the only localizing features of posterior mid-line cerebellar tumours. Careful consideration of the order in which the clinical features arise may be helpful. In pontine lesions drowsiness, cranial nerve lesions and spasticity appear early, while papilloedema is late. Sensory loss and difficulty in swallowing may be present. In supratentorial lesions, ataxia follows signs of raised intracranial pressure, such as headache, vomiting, and papilloedema, and is of no localizing value. Where ataxia precedes these features, it is likely the focus is cerebellar. The next case is one in

which presumably a marked rise in intracranial pressure was the cause of the cerebellar signs.

#### CASE 4

B.D., age 6 years, presented with torticollis. After a period of bed rest it was noted he was ataxic. Craniotomy revealed numerous hard nodules on the floor of the 4th ventricle. Biopsy was consistent with tuberose sclerosis.

He was referred into Winnipeg on June 1, 1951, for a torticollis. On March 11, he was feverish, vomited, and was unconscious for 15 minutes following a generalized convulsion. Cervical adenitis was noted. On April 18, a submandibular swelling was incised, and a considerable amount of pus obtained. From the onset of his illness, he held his head tilted to the left, and had pain in the left occiput. About May 15, the head became tilted to the right, and pain was felt in the right occipital region. When first examined, the head tilted to the right, and there was gross limitation of movement of the neck in all directions. At first he ran a slight fever, and both ear drums were a little injected, but these rapidly

showed a coarse nystagmus. Examination of the fundi showed the veins to be full and the disc margins blurred. There was minimal ataxia of the arms. Plantar response equivocal. On admission to hospital lumbar puncture was again normal. W.R. and Kahn negative. X-ray of the skull showed the sutures to be moderately separated; cranium large and well defined convolutional atrophy was present. The sella showed moderate general enlargement. A ventriculogram showed the 3rd and lateral ventricles to be markedly enlarged but no displacement. The aqueduct only filled for 7-8 mm., and the most distal portion visualized appeared to be displaced anteriorly (Fig. 3). The conclusion reached was that of a space occupying lesion in the vermis of the cerebellum extending upward to obstruct the aqueduct.

On September 11, 1951, a sub-occipital craniotomy was performed and the vermis split. Numerous hard nodules were seen in the floor of the 4th ventricle and one in the aqueduct, acting as a ball valve, was removed. These grossly resembled tuberose sclerosis. Post-operatively the boy's recovery was uneventful. The ultimate prognosis was considered to be bad, but it was felt that there was no further treatment available. When last



Fig. 3



Fig. 4

Fig. 3. (Case 4).—In spite of adequate manipulation of the head no gas has passed more than 7 or 8 mm. into the aqueduct of Sylvius. Fig. 4. (Case 5).—There is enormous enlargement of the lateral ventricles. The diverticulum of the right lateral ventricle is clearly visible. (Arrows).

settled. There was no enlargement of the glands of the neck. Numerous café-au-lait spots were seen, and tenderness over the sub-occipital region and atlas was noted. There was hemi-atrophy of the right leg and arm. A tentative diagnosis of subluxation of the atlanto-occipital joint was made. X-ray, however, showed no evidence of this. At this stage, the possibility of a spinal neurofibroma was considered. Neurological examination at that time was negative, although no note was made regarding the fundi. Lumbar puncture was normal, with no evidence of block. It was decided to treat with rest and neck traction. Three weeks later the torticollis was much improved. X-ray showed very slight scoliosis convex to the right. A wide defect in the posterior arch of the atlas was considered to be an unimportant congenital anomaly. Shortly after this the boy was allowed up and sent home.

On August 22, 1951, the parents brought the child back and reported that he had had great difficulty in walking when he first got home, but this had improved. On this occasion it was obvious that the child was ataxic and walked on a wide base with a shuffling gait. There was no torticollis, and there was only slight limitation of neck movement when looking to the left. He

seen on April 10, 1952, the parents reported the child to be growing weaker. Examination showed marked bulging at the site of the craniotomy. The head was held over to the right with some rotation of the chin to that side. The right shoulder was in advance of the left. Child alert and intelligently co-operative. Decompression tense, movement of head away from position painful. Fundi negative. No complaint of headache, but only sore neck. Walked better than when he left hospital. Microscopic examination of the glial nodules removed at operation showed them histologically to be consistent with the lesions of tuberose sclerosis.

This case was of interest diagnostically, as it was not until a period of bed rest had brought out the marked ataxia that an intracranial lesion was suspected. If more attention had been paid to the large head and the possibility of this being a "cerebellar tilt" rather than a torticollis, a diagnosis might have been arrived at earlier. A

number of writers have commented on the association between von Recklinghausen's disease and tuberose sclerosis. McDonald Critchley and Earl describe a series in which conditions associated with tuberose sclerosis are analyzed in detail. Café au lait spots, nerve atrophy and other congenital anomalies are mentioned.

The last case is one in which there was very extensive cavitation of the spinal cord and cerebellum.

#### CASE 5

B.L., aged 10 years, had a progressive scoliosis of the spine and ataxic gait. There were signs of raised intracranial pressure which was not relieved at operation. This child had syringomyelia with cysts of the cerebellum.

She was first seen in July, 1951, and gave a history of a deformity of the spine, becoming progressively worse over a period of 4 or 5 years. Development up to this time had been normal. She had become unsteady on her legs, and suffered with urgency of micturition for 4 years. Examination showed slight ptosis, and right pupil larger than the left. Visual fields normal. Fundi and maculae normal, but vessels congested. She walked on a wide base with an ataxic gait. Marked scoliosis of the spine. No wasting or fasciculation of the muscles; normal tone with some weakness of the limbs, which appeared more marked on the left. Response to tests of sensation were variable, but there was definite dissociated anaesthesia on the right side from T.2 downwards. Vibration and postural sense appeared to be within normal limits. Reflexes were brisk, and both plantar responses were extensor. Lumbar fluid was normal. W.R. and Kahn negative. Gastric washings (4) were negative for T.B. Mantoux up to 1/100 negative. X-ray of chest showed increased markings at the left base and an increased density in the right lower medial lung. X-rays of the spine revealed slight scoliosis convex to the right in the cervical region and marked scoliosis to the left of the thoracic spine, with an increased posterior curvature. The bodies of T.6, 7, 8, and 9 were slightly wedge shaped anteriorly, and there was no bony abnormality to account for this lesion. There was no separation of the suture on skull x-ray, but the cranium appeared large. Posterior fossa relatively small. Convolutional markings were slightly exaggerated, the posterior clinoids and dorsum sellae appeared to be compressed from above, although the remainder of the sella was reasonably normal. Ventriculogram on July 25, 1951, showed enormous enlargement of the lateral and 3rd ventricles. A rounded soft tissue shadow filled nearly all of the 4th ventricle, but the superior portion as well as the left lateral portion contained some oxygen. No oxygen beyond this point. There was quite a large collection of gas in the mid-line, apparently rather close to the apex of the tentorium above the 4th ventricle which probably represented a diverticulum or diverticula of the lateral ventricle (Fig. 4).

A craniotomy on July 31, 1951, showed a cyst in the region of the pons which was marsupialized into the cisterna magna. At postmortem, the lateral and 3rd ventricles and the aqueduct were greatly enlarged. The floor of the 3rd ventricle projected from the base of the brain as a small sac which displaced the optic chiasma downwards and forwards. There was a protrusion from the right lateral ventricle extending in a postero-medial direction and extending across the mid-line into the cerebellar fossa. A cyst replaced most of the right cerebellar hemisphere and extended across the mid-line for ½ cm. into the left hemisphere. Part of the floor of this cyst had been marsupialized. Cavitation of the spinal cord extended from the cervical to the lumbar enlargement (Fig. 5).

This case was of particular interest, not only on account of the very extensive lesion, but also because of the presence of diverticula of the lateral ventricles extending into the cerebellar fossa near the apex of the tentorium.

In summary, I would say that ataxia in childhood presents a fascinating study, and is a feature in which it behooves one to take pains, both in its elicitation on routine examination and its subsequent elucidation.



Fig. 5. (Case 5).—The spinal cord contains multiple cavities involving its entire extent, but least marked in the caudal portion.

I am indebted to Dr. A. E. Childe for the x-rays, fuller details of which will appear in *Acta Radiologica*; to Dr. J. Hoogstraten for photos of the pathological specimens; and to the late Dr. O. J. Day for helpful criticism and advice.

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ACUTE GASEOUS  
CHOLECYSTITIS

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THE RELATIVE RARITY of acute gaseous cholecystitis (less than 35 cases reported in the literature) and the divergence in opinion as to the best method of treating it, make a case report and discussion of this condition of some general interest. Lobingier<sup>1</sup> 1908 was the first to report the operative finding of gas in the gallbladder associated with gangrene of the mucous membrane. Hegner<sup>2</sup> 1931 was the first to make a preoperative diagnosis by plain x-ray film of the abdomen, which revealed a pear-shaped gas shadow corresponding in size and shape to an enlarged gallbladder. McCorkle and Fong<sup>3</sup> 1942, in an excellent report, dealt with 3 cases, 2 of which were successfully treated without operation. Qvist<sup>4</sup> 1951 summarized 25 cases, of which 18 had been operated upon, with 4 deaths (22% mortality) and 7 had been dealt with conservatively with no mortality. Cases not dealt with by Qvist include one of Cowdey and Copeland<sup>5</sup> and two of Rothbart and Steinberg<sup>6</sup> which were successfully treated surgically, and one case of Rocco *et al.*<sup>7</sup> which was treated conservatively with subsequent interval cholecystectomy. Schottenfeld<sup>8</sup> describes two cases in which gas was demonstrated in the gallbladder preoperatively and which were successfully treated surgically. He also writes of one case in the literature as being a medical treatment failure, but does not give a definite reference to this. This may be the case described by Hallé and Marquézy<sup>9</sup> in which gas gangrene of the gallbladder with perforation was found at autopsy. The organism in this case was *Cl. perfringens*. Considering the extra cases, the score in the literature now reads: cases treated surgically, 23 with 4 deaths (mortality 17%); and treated medically, 9 with 1 death (mortality 11%). As will be pointed out subsequently however, this apparent advantage of medical over surgical treatment is spurious.

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## CASE REPORT

A.J., a 70 year old man, was first seen on September 15, 1952. He gave a history of sudden onset of upper abdominal pain and vomiting 3 days previously. Pain was at first in mid-line in epigastric region and then shifted to the right side. While there was no further vomiting, anorexia persisted and the patient did not eat. Pain tended to keep him awake at night and gradually increased in intensity. He gave no history of any previous disturbances of digestion.

The positive findings were confined to the abdomen. There was tenderness and rigidity across the whole of the upper abdomen, which also extended down the right side to just below the anterior superior spine. There was rebound tenderness referred to this whole region and it hurt the patient to turn over in bed. There were bilateral inguinal hernias and a small epigastric hernia which was quite tender. Temperature was 99.6°. A diagnosis of an acute abdominal emergency was made. The patient was given 600,000 u. procaine penicillin at once, and arrangements made for his admission into hospital for operation. On arriving at hospital, his temperature was 102°, W.B.C. 21,000, serum amylase 16.6 u., and urine was negative for sugar or albumin. A flat plate of the abdomen revealed a pear-shaped gas-filled mass in the right upper quadrant and surrounding this on one side was a thin crescentic dark line of air in the tissue (Fig. 1). The diagnosis of acute gaseous



Fig. 1



Fig. 2

Fig. 1.—Gallbladder distended with gas as on flat x-ray plate of the abdomen. The crescentic line of gas to the right of the gallbladder is to be noted. This represents interstitial gas in the gallbladder wall. Fig. 2.—Gas in gallbladder in upright x-ray film. The fluid level below the gas is to be noted, and again there is the crescentic line of interstitial gas along the right side of the gallbladder.

cholecystitis was made, and was further substantiated by a plate taken in the upright position, which revealed that the gas shadow had risen, with a definite fluid level below (Fig. 2). There was no evidence of free air under the diaphragm, or of any fistulous communication between the gallbladder and the bowel. Operation was performed 4½ hours after patient was first seen, with a diagnosis of acute gas gangrene of the gallbladder. Under the preoperative sedation there was sufficient relaxation of the upper abdominal rigidity to allow the visualization and ready palpation of a tense globular mass in the right upper quadrant, which, due to abdominal splinting had been impossible previously, and which was obvious as the gallbladder.

At operation, under endotracheal anaesthesia a right upper abdominal paramedian incision was made. Omentum was found to be adherent in the gallbladder region. This contained some areas of yellowish exudate, but was fairly readily freed from the gallbladder, which was found to be reddish, distended and tense, and to have near its fundus 3 or 4 grayish gangrenous patches. The gallbladder was removed gingerly from the fundus downward. It was not aspirated because of fear of spilling highly septic contents into the peritoneal cavity. The

cystic duct was quite small. The common duct was small, not thickened, and contained no palpable stones, and as there was no history of jaundice it was not opened. Oozing from the gallbladder bed was controlled with some difficulty. A drain was carried down to the region of Morrison's pouch, and the abdomen was closed in layers. A mixture of penicillin and streptomycin in solution was sprayed about the gallbladder bed, and over the wound edges prior to closure.

One hour prior to operation, the patient was given 600,000 u. procaine penicillin and 1 gm. streptomycin. Postoperatively the patient received 600,000 u. procaine penicillin t.i.d. for 4 days, then 600,000 u. daily for 2 days, and streptomycin 1 gm. b.i.d. for the first 4 days postoperatively.

The postoperative course was completely uneventful.

On opening the gallbladder, gas escaped. There were several pieces of gallstones in the region of the gallbladder neck probably due to disintegration by the gas. The gallbladder wall was considerably thickened, apparently due to previous pathological processes. The mucosa, in areas, separated readily from the wall of the gallbladder, which suggested that the interstitial gas observed in the x-rays had actually been in the submucosal layer. On microscopic examination of tissue from near the fundus of the gall bladder, the normal architecture was found to be almost completely destroyed, and there was necrosis of tissue in all layers. Cellular detail was obliterated, and some of the vessels showed signs of

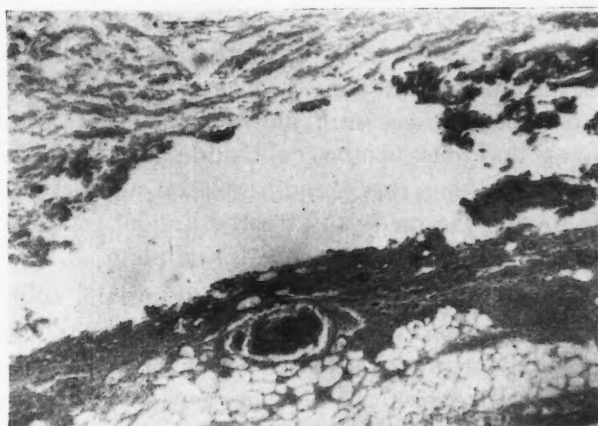


Fig. 3.—Section through gallbladder wall (magnification  $\times 35$ ). The gangrenous changes throughout the wall are to be noted particularly in the upper part of the section which represents the mucosa. The separation between the mucosa and the rest of the wall is considered to be due to the presence of the interstitial gas in this layer.

thrombosis. A diagnosis was made of gangrene of the gallbladder wall. In some sections (Fig. 3) the mucosal remnants could be seen to be separated from the rest of the wall, by a clear space, and it was judged that this represented the layer in which the interstitial gas had spread.

Bacteriologically there was no growth in the aerobic cultures after 48 hours, but on anaerobic investigation, filamentous Gram positive gas-forming bacilli were found. These were not typical of *Cl. perfringens*.

**Characteristics of acute gaseous cholecystitis** (as based on reported cases).—Males predominated in a ratio of 3 men to each woman. Older age groups were chiefly involved, 78% of the cases being over 50. 22% of the cases had diabetes. Gallstones were present in at least 87% of the cases. In over 87% of the cases anaerobic gas-forming bacilli were the organisms involved (for exceptions see<sup>10, 11</sup>). Clinically, except roentgeno-

logically, these cases were indistinguishable from attacks of acute cholecystitis in which gas-forming organisms were not involved. X-rays taken immediately after the onset of the attack, characteristically do not show gas, which does not begin to appear for from 24 to 48 hours after the onset.<sup>3, 5</sup> The gas then tends to steadily increase in amount as long as the condition is progressing. Of the operative procedures utilized, cholecystectomies have been the most successful, only one death being reported.<sup>12</sup> Cholecystostomies carried out prior to the localization of the infection in the area, have tended to be associated with spreading infection, which was in some cases fatal.<sup>3, 13</sup> After regional localization, cholecystostomies have usually been successful, and not characterized by a tendency for the infection to spread.<sup>4, 6, 10, 14, 15</sup>

#### DISCUSSION

In considering this interesting condition, there are several questions that come to mind.

**Origin of bacteria and their rôle in this disease.**—In view of the absence of distant manifestations of infection, and of the presence of anaerobic organisms in normal livers,<sup>16, 17</sup> there would seem to be little doubt that the anaerobic organisms get into the gallbladder from the liver, either in the bile or by direct extension from the liver. Mason and Hart<sup>16</sup> have been uniformly able to cultivate *Cl. Welchii*-like anaerobic organisms from normal human livers, and it would seem that these are normal inhabitants of the liver, in all probability brought there from the bowel via the portal circulation. Markowitz<sup>17</sup> points out that similar anaerobic organisms are invariably found in normal dog livers, and he and his co-workers<sup>18, 19</sup> have shown that their multiplication leads to the animal's death on ligation of the hepatic artery with its resultant lowering of the oxygen tension in the liver, unless penicillin or other antibiotic is given, which effectively controls these organisms. If such therapy is given, the animals survive.

There is considerable evidence<sup>20, 21</sup> that acute cholecystitis is primarily due to metabolic and mechanical factors rather than to infective processes, and this would seem to be the case with gas gangrene of the gallbladder. The slow development of the gas in the gallbladder as demonstrated roentgenographically, would suggest that the gas-producing organisms are actually secondary invaders, rather than primary

etiological agents, and that while they increase the seriousness of the disease, they do not initially produce it. By analogy with the findings in the liver itself, one might suspect that these anaerobic organisms would only proliferate in those cases in which there was some interference with the circulation of the gallbladder, such that suitable anaerobic conditions might prevail. The fact that the infection seems to be less invasive than in some areas, may be because the surrounding tissues are well oxygenated, and hence quite resistant to the further spread of the organisms.

*Location of interstitial air in gallbladder wall.*—The case reported in this paper would seem to indicate that the interstitial air seen on x-ray examination is in the submucosal layer. The evidence for this is (a) the x-ray appearance itself when taken in conjunction with the thickened gallbladder wall found in the removed specimen. In the x-ray the interstitial air seems to be separated from the lumen only by a thin line of tissue. (b) On gross pathological examination the mucosa stripped from the underlying gallbladder wall more readily than usual, suggesting that the gas had already produced some separation of these layers; and (c) on microscopic examination there was a space separating the mucosa from the rest of the gallbladder wall. It is possible that the gas or gas-forming bacteria get into the submucosal layer at a point of ulceration in a Rokitsky-Aschoff sinus.

*The diagnosis of acute gaseous cholecystitis from cholecystenteric fistula.*—The radiological demonstration of gas in the gallbladder at once suggests the possibility of a cholecystenteric fistula. The differentiating x-ray points that lead to the diagnosis of an acute gaseous cholecystitis are: (1) The presence of interstitial gas in the gall-bladder wall. (2) The demonstrability of a fluid level in the gallbladder. (3) The absence of any radiological evidence of the air communicating with the air in the bowel. (4) the gallbladder is distended with gas, whereas in the case of a fistula, the gallbladder is small or normal in size. Usually it should be possible to make a diagnosis on these findings alone, but if further investigation is desired, a gastric series and a barium enema may be carried out, and if none of the radio-opaque material gets into the gallbladder, it is unlikely that a fistula exists. The clinical history of course is of some value

in helping one to reach a decision as to which condition is the more likely.

*Ideal treatment.*—This is a question of great interest. After seeing the clinical condition of the patient, and viewing the distended hyperæmic gallbladder with its greyish gangrenous patches, and demonstrating anaerobic gas-forming organisms, one is amazed to find that in many cases conservative medical treatment has been successful in dealing with this condition. The reported medical mortality is actually less than that with surgical treatment. The cases treated medically have by no means been particularly mild cases. Those reported by McCorkle and Fong<sup>3</sup> seemed to be quite severe. The medical therapy used has varied and includes the following: no specific therapy; anti-gas gangrene serum, sulfonamides, penicillin, and streptomycin. With more vigorous antibiotic therapy, and if necessary the utilization of other newer antibiotics, one might suspect that the medical results might be even better still. Steady improvement in the clinical condition of the patient occurs when medical treatment is successful. The recurrence of symptoms and gas in the gallbladder after a few weeks in one case<sup>22</sup> indicates the necessity of following the medically treated patient for some time to make sure the cure is complete.

Against the medical treatment on the other hand, we have to consider the following points: (a) that some cases treated medically may have died undiagnosed; (b) that in some cases surgery was resorted to only when there was clinical evidence that the patient's condition was deteriorating despite the conservative treatment.<sup>2, 10, 14</sup> If these cases are considered failures of conservative therapy, some of its lustre is dimmed. The mortality in Hegner's case<sup>2</sup> due to pulmonary embolism might well be chalked up against conservative therapy rather than against the surgical treatment, as surgery was only resorted to when the patient clinically was getting worse despite medical treatment. The work of Ryan<sup>23</sup> and Cummine and Lyons<sup>24</sup> indicates that collections of pus, such as in this case, predispose to thromboembolic phenomena. (c) If medical treatment is utilized only, almost invariably a thickened diseased organ containing stones is left in place, that will very likely be the source of further trouble, which may be of a quite serious nature. (d) x-rays taken during the period of resolution of cases treated conservatively indicate that gas spreads outside the

confines of the gallbladder prior to resolution.<sup>3, 12, 25</sup> This indicates that perforation with local abscess formation has occurred. The cases in which surgery has been performed at this stage corroborate this viewpoint.<sup>7, 12</sup> The fact that such perforations seem invariably to occur, indicates that pathological changes on resolution will not be confined to the gallbladder alone, but that also the neighboring tissues and organs may be adversely involved. Also such perforations may not always remain localized, but conceivably could on occasion involve the whole peritoneal cavity with early disastrous results.

On the surgical side on the other hand, recognizing that if conservative therapy is successful, a diseased and potentially dangerous organ is present in the body, interval cholecystectomy would seem to be indicated in every case, preferably after the lapse of a 2 or 3 month period. Despite the feelings of McCorkle and Fong<sup>3</sup> against doing this, the evidence indicates that this procedure is quite safe, and indeed advisable.<sup>2</sup>

The surgical mortality like the medical mortality can also be greatly improved by the vigorous use of modern antibiotic therapy, and once the gallbladder is removed the patient is in one stage freed of a future seat of trouble. The literature would indicate that spillage of gallbladder contents in these cases is not as serious as one would have believed.<sup>14</sup> In the case reported herein great care was taken not to rupture the gallbladder, and the gallbladder was not aspirated for fear of spilling virulently septic contents. A review of the literature would indicate that aspiration can be safely carried out<sup>26</sup> and it would certainly facilitate the removal of the offending organ. A condition in which the evidence indicates that untreated perforation of the gallbladder occurs in 100% of the cases, would certainly seem to warrant early surgical intervention. In our opinion therefore, the ideal treatment is early operation carried out as soon as practical after diagnosis, with removal of the aspirated gallbladder under the cover of intensive antibiotic therapy. If circumstances make this impossible, then conservative treatment with intensive antibiotic therapy, and possibly with anti-gas gangrene serum will in all probability be successful, to be later followed by an interval cholecystectomy. If the clinical condition of the patient is deteriorating despite conservative treatment, then earlier surgical inter-

vention will be indicated, and will likely be successful.

The question arises as to which is the best antibiotic to use. In this case the combination of penicillin and streptomycin in large doses was eminently successful. Markowitz<sup>18</sup> and his co-workers have shown that penicillin alone in most cases will prevent the proliferation of anaerobic organisms in the liver, which normally occurs after ligation of the hepatic artery. Others have shown aureomycin to be effective. The relative cheapness of penicillin and streptomycin recommend their use initially in large amounts, with a change to other antibiotics if the response is not satisfactory. *In vitro* evidence indicates that only terramycin is effective against the anaerobic gas-forming organisms in less concentrations than penicillin<sup>27</sup> and clinically it has proven quite effective.<sup>28, 29</sup> It would seem to be the therapeutic agent of choice at the present time, although both aureomycin and chloromycetin are also active against these organisms. Due to antagonistic effects these antibiotics should not be given simultaneously with penicillin and streptomycin.<sup>30</sup>

The realization that anaerobic bacteria are almost constantly present in the liver and bile makes us believe that no extensive procedure should be carried out on the biliary system or liver without covering antibiotic therapy.

*The value of x-rays in acute abdominal conditions.*—In the case reported in this article, the flat plate x-ray of the abdomen proved of great value in clarifying the diagnosis in an acute abdominal condition of uncertain etiology. Others<sup>6, 31</sup> have also found this procedure to be very helpful in reaching a definite diagnosis. We would therefore recommend that a flat plate of the abdomen should routinely be taken in all acute abdominal conditions of which the exact underlying pathology is not clear cut. Certainly it would seem to be indicated in all cases of acute cholecystitis in persons over 60 years of age. In this group, if gas were observed in the gallbladder, early operation would be indicated.

#### CONCLUSIONS

1. The ideal treatment of acute gaseous cholecystitis is operation as soon as practicable with removal of the aspirated gallbladder. The procedure to be carried out under an intensive cover of antibiotic therapy.

2. Perforation invariably occurs in untreated acute gaseous cholecystitis. The resulting infective process is usually localized to the gallbladder area.

3. The line of gas in the gallbladder wall seen in this condition, is, at least initially, in the submucosal layer.

4. The growth of the gas-forming organisms is secondary to, and not responsible for, the initial development of the acute cholecystic process.

5. The differential diagnosis between acute gaseous cholecystitis and a cholecystenteric fistula can usually be made on the basis of plain x-rays of the abdomen.

6. A flat x-ray plate of the abdomen is desirable in any acute abdominal condition in which the diagnosis can not be made with considerable certainty, and in any severe case of acute cholecystitis, particularly in an elderly patient.

We would like to acknowledge with appreciation the advice and co-operation of Dr. Burns Plewes, Chief Surgeon, Toronto East General Hospital, in the management of the case reported in this article. The photographs included were made by Mr. Delight, Photographer, of the Toronto East General Hospital.

## CANCER OF THE STOMACH

### A Survey of 411 Consecutive Cases

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#### PART I†

THE CASE MATERIAL which forms the basis of this study was drawn from the files of the Regina Clinic of the Saskatchewan Cancer Commission. It constitutes 411 consecutive cases of cancer of the stomach which presented during the decade 1939 to 1948 inclusive. The analysis of these cases falls into three subdivisions (a) clinical, (b) radiological, (c) surgical.

#### A. CLINICAL ASPECTS

(a) *Pathological proof of diagnosis.*—Of the 411 cases, the diagnosis was proven in 226 or

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Radiological Aspects—Dr. A. E. Perry.  
Surgical Aspects—Dr. Clayton Crosby.  
†Part II to follow in later issue.

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55%, either by biopsy or at autopsy. It should be noted (Table I) that such pathological proof was achieved much more frequently during the latter half of the decade due to greater emphasis on its desirability. When such proof was not ob-

TABLE I.

CANCER OF THE STOMACH 411 CASES DISTRIBUTION OF CASES BY PROOF OF DIAGNOSIS					
	1939 to 1943		1944 to 1948		Total
Biopsy.....	32	20.0%	64	25.5%	96
	48.5%		59%		55%
Autopsy.....	46	28.5%	84	33.5%	130
Clinical (only)....	83	51.5%	102	41.0%	185
Total.....	161		250		411

Included are—1 case myosarcoma (biopsy).  
2 cases primary lymphosarcoma (autopsy).

tained, only those cases were included in this survey in which clinical, roentgenographic and sometimes surgical or gastroscopic evidence pointed unequivocally to the presence of cancer of the stomach.

(b) *Incidence related to sex, age and population.*—This disease occurred in 312 males and 99 females, a percentage of 75.9 and a proportion of 3 to 1 in favour of males. It should be observed however, that a reversal of this sex incidence occurred in the third decade, there being 7 females and 1 male in this age group (Table II).

The average age incidence of cancer of the stomach in this series was 61.6 years. Peak incidence for male was 62.7 years and female 60.6 years. The youngest cases were one male age 24 years and one female age 25 years; oldest were one male 93 years and one female 84 years. It

period. Also shown is the relation to total number of benign upper gastro-intestinal tract lesions.

It will be noted that cancer of the stomach constitutes approximately 50% of all gastric lesions seen at the clinic.

(d) *Symptoms.*—These were analyzed as they were elicited at the time of initial cancer clinic examination. The commonest symptoms first noted by the patient were epigastric pain, anorexia and weight loss. The pain was more definite than a vague sense of discomfort and amounted to a soreness or ache.

TABLE II.

CANCER OF THE STOMACH 411 CASES STANDARDIZED* INCIDENCE RATES PER 100,000 POPULATION BY AGE AND SEX						
Age	Male		Female		Both sexes	
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate
20 to 29.....	1	1.29	7	9.81	8	5.38
30 to 39.....	6	9.80	1	1.77	7	5.95
40 to 49.....	26	54.28	5	12.22	31	34.91
50 to 59.....	96	219.18	26	75.14	122	155.61
60 to 69.....	99	272.72	34	143.46	133	221.67
70 plus.....	84	417.91	26	181.81	110	319.76
Total.....	312	68.82	99	24.71	411	48.12

\*Standardized for age using estimated population of Saskatchewan—1948.

was observed that 88.8% of the 411 cases occurred after 50 years of age.

In Table II the incidence rates for each sex have been standardized or corrected for the estimated number of living persons in each age group. These standardized rates permit direct comparisons between ages and it will be noted that a progressive increase with age is quite evident in both sexes.

TABLE III.

CANCER OF THE STOMACH 411 CASES RELATION TO TOTAL CANCER AND BENIGN LESIONS		
	Total	Percentage
Cancer (Regina Clinic).....	5536	7.4
Cancer of stomach.....	411	
Benign gastric conditions.....	450	29.1
Duodenal ulcers.....	550	
Cancer of stomach.....	411	
Total.....	1411	

(c) *Relation to total cancer and benign lesions.*—The following table presents the numerical relation of cancer of the stomach to total number of new cancer cases observed during the ten year

A long-standing ulcer history was present in only 9% of the cases. Dysphagia occurred in 2.4% and was suggestive of a lesion in the fundus. Hæmatemesis had been observed in only 7 cases or 1.7% prior to examination. An interesting observation was that 5 patients or 1.2% presented because they had discovered an essentially asymptomatic mass in the abdomen.

In studying the less common symptoms we observe that meat intolerance was noted in only 6 cases prior to admission and in none was it the initial symptom. Ptyalism was present in only 1 case. Melena had been observed in 17 cases but again in none as an initial complaint. Two patients presented with a palpable supraclavicular node as the chief complaint and one with umbilical bleeding.

(e) *Gastric anacidity.*—The absence of free hydrochloric acid in gastric secretions as demonstrated by the alcohol gastric test meal, was observed in 79.6% of 339 cases in which it was done. But as is well known, the diagnosis of cancer of the stomach is by no means excluded when free acid is found, as occurred in 20.4% of these cases.

(f) *Delay of treatment.*—Average delay by the patient, from onset of symptoms to consultation with first physician was 27.4 weeks or about 6 months. This period was not altered over the 10 years despite the fact that a program of lay education concerning cancer had been well presented and widely disseminated by the local division of the Canadian Cancer Society. It is obvious that cancer of the stomach is so insidious in its onset and non-specific in its early symptomatology that public education does not materially affect its discovery. This unfortunate fact has been confirmed by others also.<sup>1, 2</sup>

Average delay by the physicians referring the cases for treatment was 9.3 weeks or about 2 months. Why this should be prolonged during the years 1946 and 1948 is not clear. It may be that in these years following World War II with more physicians and diagnostic facilities through the province, the preliminary investigation of these cases occurred before reference to the clinic.

When delay from date of onset of symptoms to treatment is considered, it is found to be about 8 months. This compares unfavourably with Welch and Allen's<sup>1</sup> figure of 5 months for a comparable period (1937-1946), but favourably with Judd and Gray's<sup>3</sup> *i.e.*, 51% of cases delayed longer than 1 year. Their figure of 37% of cases treated in less than 6 months is comparable to ours of 36.5% (Table IV) treated in less than 5 months (when 2 months average physician's delay is added).

TABLE IV.

CANCER OF THE STOMACH 411 CASES RELATION BETWEEN DURATION OF SYMPTOMS AND TREATMENT
36.5% cases seen in less than three months.
55.2% cases seen in less than six months.
75.7% cases seen in less than one year.
24.3% cases seen after more than one year.

There can be no doubt that such delay contributes greatly to the mortality from this disease. Since public education concerning symptomatology is not of value in reducing this factor, it is apparent the profession must explore every new approach to the problem of early case finding. In this regard, screening methods, either using techniques of diagnostic radiology<sup>4</sup> or by photofluoroscopic methods<sup>5</sup> are proving interesting.

## GASTROSCOPY

This procedure is assuming increasing importance in the elucidation of doubtful gastric lesions. Positive findings were always significant and were relied upon often in deciding for immediate operation if the appearance suggested malignant disease or for trial of medical regimen if the appearance suggested benign ulceration, other factors being equal. Follow-up gastroscopy of these cases given medical trial was useful in determining subsequent management. A negative gastroscopic report however should not encourage complacency or unduly influence management.

## B. RADIOLOGICAL ASPECT

This aspect of the study was concerned with determining the accuracy of radiological diagnosis of malignancy of the stomach, according to the several methods of x-ray examination which obtained in the Province during this period. There were four main methods of obtaining radiological services as elucidated in Table V. The trend was in the direction of some form of examination prior to clinic admission. As will be shown later, this trend, under certain circumstances, is prejudicial to the patient.

During the period under discussion (1939-1948) there were only six qualified radiologists in this province of some 800,000 population. These radiologists were located in the cities. Distances to the cities, inconvenience, expense all encouraged x-ray examination by local practicing physicians. Consequently, the statistical analysis was extended and broken down into four main groups, depending upon the initial examination (Table V).

The high percentage accuracy of the qualified radiologists as compared with any other method argued conclusively in favour of this form of examination. The non-specialist examination often resulted in many months' delay and consequently by encouraging complacency was a danger to the patient with neoplasm of the stomach.

In the last group (4), the figures, though small, appeared to indicate that it was a safer method. If the films were well taken (*i.e.*, re position, technique and number) accurate interpretation was possible in an appreciably higher percentage, even in the absence of fluoroscopic examination.

# CLINICAL AND RADIOLOGICAL ASPECTS SUMMARY

1. Of 411 cases of cancer of the stomach in the Regina Cancer Clinic 1939-1948 proportion of male to female was 3:1. Average age was male 62.7, female 60.6, youngest a male age 24—female 25 and oldest, a male 93—female 84.

2. Incidence gastric cancer related to total cases of cancer (5536) was 7.4%.

few symptoms. Therefore any slight deviation from normal digestive function, particularly in a patient over 40 years of age, demands the physician's energetic attention and thorough investigation.

2. The most important single factor in the diagnosis of cancer of the stomach would appear to be complete gastro-intestinal x-ray investigation by a well-trained and experienced radio-

TABLE V.

CANCER OF THE STOMACH 411 CASES DISTRIBUTION OF CASES BY GROUPS PERFORMING INITIAL RADIOLOGICAL EXAMINATION						
	Examined by	Number	Cancer diagnosed	Incorrect diagnosis	Inconclusive	Percentage diagnosed as cancer
A. Qualified radiologist	(1) At clinic	260	242	13	5	93
	(2) Not at clinic	76	62	10	4	82
B. Non-qualified practicing physician	(3) Films interpreted by physician	43	21	16	6	49
	(4) Films interpreted by specialist	16	9	3	4	56

3. Of all lesions of stomach and duodenum examined, 29.1% were gastric cancer.

4. Pain, anorexia and weight loss were the commonest presenting symptoms. 9% of these cases had long-standing pre-existing ulcer symptoms.

5. 79.6% of all cases tested showed achlorhydria and 20.4% showed free acid.

6. Of 411 cases, 395 were examined radiologically and diagnosis made in 84.5%. Of cases with x-ray examination by the clinic initially 93% were diagnosed cancer. Examinations by non-qualified practitioners were not reliable but radiographs submitted to qualified radiologists for interpretation produced more favourable results.

7. It would appear that diagnostic radiology was more accurate in a special centre and since radiology is as yet the most important diagnostic procedure, this is a strong point in favour of centralization of diagnostic methods.

## CONCLUSIONS

1. Early symptoms of gastric cancer are extremely vague and often patients in the advanced stages of the disease, present themselves with

logist. Under these conditions 93% accuracy may be anticipated.

3. Comprehensive clinical investigation of suspected cases is essential and is best served by a concentration of all modern facilities including gastroscopy.

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## ALCOHOL AND ROAD ACCIDENTS IN 1951 (IN BRITAIN)

In 1951, 1,309 road accidents were said by the police to be due in some measure, to persons being "under the influence of drink or drugs". There were 1,704 casualties in these accidents, forming 0.8 per cent of all road casualties. It is, however, known that the police are reluctant to assign alcohol as the cause of an accident unless they have very good evidence, and there is reason to believe that the true number of accidents due to "drink or drugs" was much bigger than the above figure.

The figures for 1951 show increases of about 34% on those for 1949. These increases in accidents can be explained by the increases in motor traffic on the roads at the hours at which "drink" accidents were especially likely to occur.—*Brit. J. of Addiction*, 50: 74, 1953.

## MENTAL ILLNESS AMONG DISPLACED PERSONS\*

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THE GROUP with which this paper is concerned consists of those who have emigrated from Continental Europe to Canada since the end of World War II. Accurately, the term "displaced persons" refers to a particular group of Middle Europeans uprooted by the war, who in the middle and late 1940's were cared for by United Nations Rehabilitation Services. The term then refers to some, but not all, of the Canadian immigrants. For present purposes, however, it refers to the whole group.

Those immigrants who have developed serious mental illness since their arrival pose a particular problem in diagnosis and therapy. An attempt has been made to investigate this matter by analyzing all admissions to the Winnipeg Psychopathic Hospital from the termination of the Second World War to the end of 1952.

Such a manoeuvre has many limitations. In studying hospital admissions we are dealing only with severe forms of mental illness. And, these immigrants are a problem too in out-patient psychiatric, general medical, and psychosomatic clinics. No attempt is made here to assess these minor mental illnesses, despite their obvious importance.

Sixty displaced persons have been admitted to our Psychopathic Hospital. Some obvious difficulties arise in their management. It is usually impossible to establish adequate communication with the patient. Of the group of 60 only 21 could speak English so as to be understood; 33 could not; in 6 the extent of English knowledge could not be determined. Most of the patients thus could not verbally understand or be understood by the staff. This has interfered greatly with psychotherapy. Of course, even the 21 who had learned English, often during their acute illness would drop the newly learned language and revert to their mother tongue. Attempting to arrive at a satisfactory formulation of the cause of illness and a plan of treatment, and particularly in carrying out psychotherapy, it is often difficult to understand the patient and his reaction to his problems. If the essence of good psychotherapy is the ability to put oneself in the

patient's shoes, with this group a barrier is encountered. One is faced with a young man or woman, reportedly of good intelligence, who may have to be approached through an interpreter. One is told that he was born in Poland of German parents, that he was well educated, and made a more or less satisfactory early adjustment. In the 1940's, perhaps when he was late in his teens, his mother, father, sisters, and brothers and perhaps all his relatives were killed either by Fascists or Communists, following which he wandered about Europe in various armies and various concentration camps, in repeated situations calculated to cause fear, guilt and hostility in all combinations. Finally, he has come to Canada, in a desperate hope of finding a new life, only to meet further adjustment problems and to become mentally ill.

This type of story with many variations is heard in case after case. It is not easy to put oneself in this patient's shoes. In many of our files we find that either a predisposing or a precipitating cause of the illness was "stress of war" or "stress of adjusting to a new country", but actually this reveals little real understanding on our part of the factors involved in the illness and particularly of how the patient feels about the illness.

For those patients who cannot speak English, obtaining a satisfactory interpreter has presented for us a real challenge. Most of those Canadians available who speak middle-European languages are either recent immigrants themselves, or are first generation Canadians, working as attendants, nurses, orderlies, etc. Despite the usual co-operativeness and sincerity of these translators there is added to the usual difficulty of approaching the patient through a third person, the problem of the interpreter's empathy with him. Many of our interpreters have strong feelings due to stress in their own past, and a statement made by the patient concerning his political or army activities, attitude to parents, etc., has frequently aroused such a reaction in our assistant that he has become essentially useless. Despite this, the use of the interpreter is often essential, and is invaluable within the above limitations. When the communication barrier is broken, many patients are found to have very disturbing and conflictual feelings about persons and events in Europe, and on this background to have in Canada adjustment problems in economic, marital or social spheres. Often these

\*Read before the Annual Meeting, Canadian Psychiatric Association, Winnipeg, June, 1953.  
From the Winnipeg Psychopathic Hospital.

cannot readily be solved. Some will be outlined briefly.

Many of the patients have left members of their family in Europe. There may be guilt about leaving them. A few families have made great sacrifice to enable the patient to emigrate. A minority have guilt feelings concerning false statements they made in order to get into Canada.

There are marital problems, and it would appear that not a few have made unsatisfactory marriages precipitately in Europe. Often this occurs because of chance circumstance, such as both partners having lost previous spouses or being thrown together by mutual hardships. Often when the smoke clears husband and wife find they have little in common. In one family the husband had extreme and continuing hostility to his wife and step-daughters because he felt them inferior to his own daughters, who had been killed with his first wife just before the present marriage.

It must be emphasized that this group, and the problems which they report, are those of immigrants who in Canada have developed severe mental illnesses. Did this group have more stress or greater problems in Europe than those who have remained well? Or do their difficulties in adjustment stem from fundamental personality disorders or from the nature of the recent stress. Often we do not know.

Discussion with employment and immigration officials reveals a general impression that the immigrants as a whole have adjusted well to Canada, and there is only a small minority who develop either severe social or employment problems, or emotional illness. This is remarkable in view of the great readjustment all have had to make in this new country.

A statistical study has been undertaken of the hospital admissions of these recent immigrants. The Winnipeg Psychopathic Hospital is a 38-bed, acute treatment unit. Coma insulin therapy is not used. Patients requiring this, or other prolonged treatment, are transferred to Mental Hospitals.

Fig. 1 shows the absolute number of first-admissions of displaced persons to this hospital yearly. There were 60 first-admissions in all. The lack of admissions from 1945 to 1947 inclusive, despite the fact that the war ended in Europe early in 1945, is due to there being only 1,500

immigrants from Continental Europe to Manitoba in this period.

Fig. 2 shows yearly what percentage of all first-admissions were displaced persons, dealing now only with the years in which admission of immigrants did occur, that is, 1948 to 1952 inclusive.

Fig. 3 indicates how long each patient was in Canada prior to his first psychiatric hospitaliza-

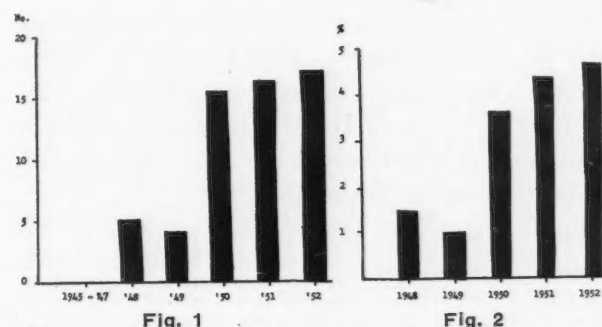


Fig. 1.—Yearly admissions. Fig. 2.—Percentage of first admissions.

tion here. It is discovered that over a third of the patients were admitted during their first year. As the number of years in Canada increases, of course the number of immigrants concerned decreases and thus the admission rate falls.

It has not been found possible from available data to determine accurately the absolute ad-

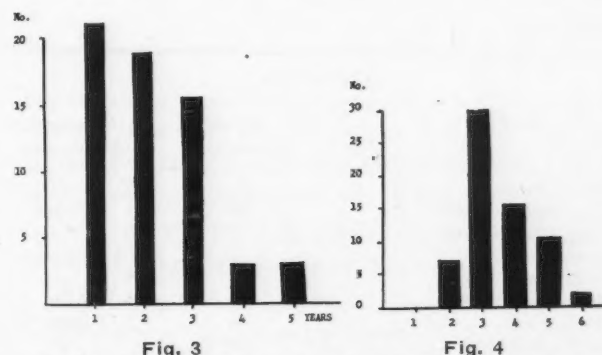


Fig. 3.—Years residence in Canada. Fig. 4.—Age by decade.

mission rate, but we have tried to compare it with that of the rest of the population. The Department of Immigration records that approximately 25,000 immigrants came from the European Continent to Manitoba in the years 1945-52 inclusive. In 1952 there were 22 total admissions among this group.

In order to determine an approximate admission rate one must make 2 assumptions, both of which seem reasonable, but cannot be proven. First, one must assume that in 1952 there were

approximately 25,000 immigrants resident in Manitoba. That is, that inter-provincial movement and death did not change the original figure significantly. The second assumption is that the displaced persons are distributed about the Province by residence as is the rest of the population. This assumption must be made since this hospital admits patients from a geographical area comprising only about three-quarters of the provincial population.

If these assumptions may be made regarding inter-provincial movement and residence distribution, a displaced person total admission rate for 1952 of 117 per 100,000 is obtained. All other admissions to the hospital for 1952 totalled 529, which is a rate of 97 per 100,000.

Considering the conjectural nature of the original assumptions, I would draw no conclusion from these respective admission rates. It appears however that so far as hospital admission is concerned, mental illness among displaced persons is not a particular problem quantitatively. It is a qualitative one due to diagnostic and therapeutic barriers.

Analysis of the records of these displaced persons brought certain interesting facts to light. As one would expect, these are young and middle-aged patients. The ages range from 15 to 54, being distributed by decade as shown in

TABLE I.

	DIAGNOSIS	
	% all other admissions	% immigrant admissions
Schizophrenia.....	31	46
Organic psychosis.....	10	-1 (1 case)
Manic-depressive.....	18	16
Involuntal.....	3	1.5 (2 cases)
Psychoneurosis.....	8	18
Character disorder.....	4	-1 (1 case)
Alcoholism.....	8	-1 (1 case)
Undiagnosed.....	4	8

Fig. 4. Some of the peculiarities of the diagnostic classifications notably the incidence of schizophrenia and organic psychosis, are explained by this age selection.

Table I contrasts the diagnoses of all displaced person admissions with the diagnoses of all other admissions to the hospital during the 1948 to 1952 period. It is noted that 50% of the psychoneurotics in the immigrant group were diagnosed as "Reactive Depression" whereas this subclassification is made in only 30 to 40% of non-immigrant neurotics.

Though psychopathic personality and other primary character disorders with inadequate, aggressive, or antisocial components formed about 4% of our other admissions in this period, there was only one case so diagnosed in the immigrant group. Also of note is the matter of alcoholism. The percentage of non-immigrant admissions from both "Acute Alcoholic Psychosis" and a "Chronic Alcoholism without Psychosis" increased steadily from 1948 to 1952, and represented 7% in 1950, 8% in 1951 and 11% in 1952. Only one displaced person was so diagnosed. Evidently chronic alcoholism and its sequelae are no problem for the immigrant, or with the illness he avoids Psychopathic Hospital admission.

Eight per cent of the immigrants were left undiagnosed, compared with 4% for the non-immigrant group, indicating in some measure the diagnostic difficulty involved. Despite this one recalls a good deal of conjectural thinking in arriving at a statistical classification for the 92% who were given a specific label.

Concerning mental deficiency and psychoses with mental deficiency, none of the displaced persons were so diagnosed, though this category forms 1 to 2% of our admissions generally. Though we diagnosed none as being mentally defective we often suspected that some were of inferior I.Q. The language difficulty, added to the general problem of the inaccessible patient, often made it impossible to be certain of the intellectual level, even though non-verbal tests were used.

Regarding previous mental health, history revealed that 40 had had no previous severe mental illness, 2 had been previously ill elsewhere in Canada, and 16 had had a previous breakdown in Europe, 11 of these requiring mental hospital or sanatorium care. In two cases the illness obviously began in Europe and was continuous to the time of admission to our hospital. Therefore 16 out of 60, or 26%, had previous severe and usually psychotic illness in Europe. In 11 of the 16 the illness occurred during the war years or in periods of gross stress immediately prior to this, and there was reason to believe that extreme hardship was an etiological factor. In those cases in which accurate history could be obtained it appeared that our experience was similar to that of others in revealing that the psychosis occurred not actually

during the stressful period but closely following it.

With regard to the outcome of the illness of these 60 displaced persons, only one death occurred, this being a young man of 34 admitted with a delirium secondary to glomerulonephritis. Patients in our hospital can be divided into those who are discharged "recovered", "improved", or "unimproved", and those who are transferred to a mental hospital for further treatment.

Table II reveals that the percentage of immigrants discharged from the Psychopathic Hos-

TABLE II.

	OUTCOME	
	<i>All other patients</i>	<i>Immigrant patients</i>
Recovered.....	11%	9%
Improved.....	36%	23%
Unimproved.....	9%	6%
Transferred to mental hospital	43%	62%

pital as "recovered" or "improved" is less than that for all other patients (32 to 47%). A correspondingly larger number were transferred to a mental hospital. This indicates the difficulty in diagnosing and adequately treating these illnesses in an acute treatment hospital where the stay is brief, and also is an index of the poor response to rapid therapy.

Concerning the outcome of the 62% who were transferred to a mental hospital; of this group of 43 patients, 26 have been discharged as "recovered" or "improved"; 13 remain in mental hospital so far as can be determined, though some have been transferred to other Provinces. Only 4 have been deported to Europe.

#### SUMMARY

Certain data have been considered regarding mental illness among those emigrating from the European Continent to Manitoba in the years 1945-52 inclusive. The group includes approximately 25,000 immigrants, and 60 of these have been admitted to the Winnipeg Psychopathic Hospital. The admission rate can only be determined approximately from the data available, but it appears that the admission rate is not greatly in excess of that among non-immigrants. The types of illness seen were in keeping with the young adult and middle-aged groups involved, but there was a notable lack of admissions for psychopathic personality disorders or alcoholism, and a high incidence of "reactive depression"; 16 or 26% had had previous incapacitating mental illness in Europe.

Some of the problems arising in diagnosis and treatment have been outlined.

#### PROLONGED LABOUR\*

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PROLONGED LABOUR is not a new disease. It has existed since the beginning of time, but the methods of dealing with it have changed over the years. To give you some idea of how much they have changed it was the custom in certain parts of the world to tie the labouring woman to a table, to stand the table on its end, and to bounce it on the floor in an effort to shake the baby loose. Possibly this method was of value in certain cases of malpresentation. Another method of treatment consisted of placing a board across the abdomen and walking on it in an effort to force the child out. In certain primitive tribes a modification of this method was in use; it consisted of walking on the abdo-

men of the labouring woman. The fact that such a method was in use, and apparently was necessary, refutes the statement of the natural childbirth advocates who argue that all primitive women have their babies easily.

The American Indians had another more subtle or psychosomatic method. Their practice was to tie the case of prolonged labour to a stake and to ride their horses at the poor woman, swerving aside at the last possible moment. This was designed to scare the baby out.

In this modern day and age we have a counterpart of these ancient and brutal methods. I refer of course to the practice of giving pituitrin to a woman in the first or second stage of labour. This is a dangerous practice condemned by all obstetricians and sometimes is the cause of rupture of the uterus. I have selected only a few representative series of cases from the large number available in the literature. Fitzgerald

\*Given at the general practitioners' course, Ottawa Civic Hospital, May, 1953.

reports 42 cases with 4 due to pituitrin. Morrison and Douglas report 45 cases with 5 due to pituitrin, and Tolleson reports 25 cases with 3 due to pituitrin: an overall figure of 10% of ruptures caused by the ill-advised administration of pituitrin or pitocin. The average maternal mortality rate is 56%, and the average fetal mortality rate 86%. This very grave complication can be reduced in incidence by 10% by a more judicious use of pituitrin, which does have a place in the treatment of certain cases of prolonged labour, providing they are carefully selected and very carefully supervised, and never by the one shot method. I will discuss this later.

For practical purposes and from the point of view of treatment it is necessary to define prolonged labour. Any labour lasting more than 20 hours in a primipara is prolonged labour. Any labour lasting more than 10 hours in a multipara is prolonged labour. I do not mean to imply that labour should be terminated at this time. However, this is the time when the case must be carefully reassessed, the reason for the prolongation of labour must be ascertained, and the medical attendant from this time on should have some definite idea of how the case will eventually be delivered. When referring to labour of 10 or 20 hours I mean of course real labour with pains lasting 50 seconds or longer, occurring at frequent intervals and with some effacement and dilatation of the cervix. A great many women have irregular contractions, sometimes rather painful, for several days before they start in labour. These are false labour pains and can usually be controlled by aspirin or a grain and a half of seconal.

Why is prolonged labour important? What difference does it make if the patient is in labour another 12, 24, 36 or 72 hours? After 20 hours of labour there is an increased fetal mortality rate, an increased maternal morbidity rate, and a much higher incidence of post-partum hæmorrhage. Again, just a few figures taken from representative series of cases to illustrate this point: 202 cases of labour lasting more than 20 hours reported by Corner from the Boston Lying In Hospital showed a fetal mortality rate of 18.3%; 404 cases reported by Star in 1952 showed fetal mortality rate of 12%, and Star's 404 cases (from the University of Louisville) had a maternal morbidity rate of 18% compared to 2.4% for those whose labour was not prolonged.

Helman of John Hopkins reporting 1,034 cases

of labour prolonged past 20 hours had an incidence of post-partum hæmorrhage of 7.3% in contrast to a usual incidence of 3.8%. Sheehan's series of 147 autopsies done on women who died of shock in labour gives some very startling and thought provoking information. Every single case in the series had been in labour more than 48 hours. Prolonged labour in itself and without the other complications that may arise, is a cause of obstetrical shock. The babies from women who have had a prolonged labour require special attention. Many of them show some evidence of shock also, and they should be carefully watched, kept in an atmosphere of heat and oxygen suctioned at intervals; and given some antibiotics.

Prolonged labour is always due to one of three causes. The first is disproportion. This may be a bony disproportion; a disproportion due to too much soft tissue in the pelvis; a cephalopelvic disproportion from too large a baby, or it may be due to a constriction ring which is probably a fatigue syndrome and more likely to occur in cases of prolonged labour. Constriction ring is recognized only by vaginal and intra-uterine examination with actual palpation of the ring; but is suspected by noticing that there is no change in the station or descent of the presenting part during a uterine contraction; that the baby's head is loose in the pelvic cavity during and in the interval between uterine contractions, and that the portion of the uterus between the external os and the constriction ring is lax during uterine contractions.

The second common cause of prolonged labour is malpresentation or as I prefer to call it, positional dystocia. The delay in persistent posterior positions is of course well known to all of us. The same delay is found in transverse arrests: brow and face presentations; the so-called military position where the fetal head is not completely flexed, although it may be in an anterior position; impacted breeches; and, of course, transverse lies. Hydrocephalus although it may not be a malpresentation will nevertheless cause prolonged labour for obvious reasons, unless it is recognized and dealt with.

The third and possibly the commonest cause of prolonged labour is uterine inertia. I say possibly because it is often just an indication that one of the other causes is present. This condition, characterized by weak and irregular pains, is often hard to diagnose. To make a diagnosis

it may be necessary to sit with the patient for several hours to personally observe the frequency and character of the pains. It seems probable that many cases of so-called uterine inertia were never actually in labour but were only false labour pains or Braxton-Hicks contractions in a woman who was perhaps apprehensive or hypersensitive, or, as generally happens, both. For practical purposes a patient may be considered as a case of uterine inertia who has been having definite contractions, even although they may be rather irregular, but lasting 45 seconds or longer and over a period of 20 hours with thinning out and some dilation of the cervix, and particularly with the membranes ruptured, and who has made no progress for several hours; perhaps the pains have stopped altogether. Always providing that there is no disproportion or malpresentation present.

In reassessing these cases after 10 or 20 hours of labour and in deciding whether supportive treatment and watchful expectancy is to be preferred to Cæsarean section, certain considerations must be kept in mind.

First, an accurate evaluation of the pelvis to rule out disproportion and malpresentation is essential. This requires a vaginal examination with sterile precautions, usually best done in the case room with the patient draped as for delivery, and sometimes better done under anæsthetic. The practice of examining pregnant and particularly labouring women under anæsthetic probably deserves more consideration than it gets. Most of us have no hesitation in giving a gynæcological case an anæsthetic to aid diagnosis. There is no good reason why the same cannot be done for an obstetrical case. Often there is more at stake. To diverge for just a moment, general anæsthetic should not be given to women in the first twelve weeks of a pregnancy. There is some experimental evidence to indicate that asphyxia at this time may be a contributing factor in the development of congenital anomalies. The presence of an oddly-shaped or small pelvis is not in itself an evidence of disproportion, as in any case disproportion exists only when the baby is too large for that particular pelvis. We have all seen cases with a normal gynecoid pelvis with excellent measurements who had perhaps had several normal-sized babies previously and who had to be sectioned because in this pregnancy the baby was too large.

In addition to pelvic examination, an estimation of the size of the fetus by abdominal examination, is essential. With practice fairly accurate estimations can be made. Where facilities are available Thoms pelvimetry or other types of x-ray pelvimetry are invaluable; but where facilities for pelvimetry and its interpretation are not available a standing lateral x-ray of the pelvis of the woman in labour will give much valuable information. It will show whether the fetal head is actually engaged or not. Strangely enough it is not always possible to determine this by examination as an extreme degree of moulding or a large caput may give the impression that the fetal head is well down in the pelvis when in fact the widest part of the head is not through the brim of the pelvis. It will sometimes show the amount of moulding on the fetal head and overlapping of the bones of the cranium. An excessive amount of overlapping is often an indication of disproportion! And, it shows beyond any doubt the position of the fetus. Occasionally an antero-posterior film will give further useful information. Repeat x-rays at intervals will confirm the presence or absence of progress in some cases.

The treatment of these conditions varies of course depending on the diagnosis. In cases of disproportion, unless it is a very minor degree of disproportion, Cæsarean section is invariably the answer. Over the years this operation has become much safer and although in a woman who has been in labour for some time it does not guarantee a living baby, because the prolonged labour may have irreparably damaged the baby and in addition, Cæsarean section babies have a considerably higher mortality rate from atelectasis; nevertheless it is preferable to working a baby through a pelvis that is too small for it. It should also be pointed out that the morbidity rate following section increases rapidly in direct proportion to hours of labour.

In cases of malpresentation of the fetus, treatment consists of correcting the malpresentation after the cervix is fully dilated, and providing there is no disproportion. These cases may require supportive treatment while waiting for the cervix to dilate, as dilation is apt to be slow. In all cases of prolonged labour supportive treatment consists of intravenous fluids, antibiotics, and enough sedative to give at least 6 hours' rest in each 24 hours. The drug most satisfactory

from the point of view of rest is morphine in  $\frac{1}{4}$  gr. doses. This will stop most labour pains for a period of several hours, or at least decrease them to the point where the patient, already tired out, can sleep. When the cervix is fully dilated and has been fully dilated for two hours there is no object in waiting longer. Further delay only leads to an increased fetal mortality rate. Interference is definitely indicated.

The treatment of transverse arrests and persistent posteriors when the cervix is sufficiently dilated consists of rotation; either manually or by forceps in the hands of those accustomed to their use: to an anterior position with delivery following. Face and brow presentations should be rotated with the chin anterior, unless impacted high in the pelvis when the treatment of choice is Cæsarean section. Impacted breeches should be extracted under very deep ether anaesthesia, unless there is evidence of disproportion even in a minor degree: or in elderly primiparas, when section is a safer method of dealing with the situation.

Transverse lies with or without a prolapsed cord or arm call for version and extraction or section. The procedure to be used here will depend partly on the case. The same factors of minor disproportion or elderly primiparity influence here in favour of section as they do with breeches. The ability and past experience of the medical attendant may also influence the decision one way or the other. Internal version is a procedure carrying with it a greatly increased fetal mortality rate and also an increased maternal mortality and morbidity rate. It is to be approached with great caution. Death of the fetus is of course never a factor in favour of section.

Prolapsed cord through a partly dilated cervix always calls for section for the baby's sake: But only if the cord is pulsating and the fetal heart good after the anaesthetic has been started.

The treatment of uterine inertia when the diagnosis has been established and the possibility of it being at least in part due to disproportion or malpresentation ruled out, consists of rupturing the membranes. In a large percentage of cases this leads to increased and improved labour pains with delivery following in a reasonable time. In a few cases no improvement follows and these are the cases where intravenous pitocin or pituitrin is of definite value. The solution must be very dilute. I prefer it in 4 mm. to 1,000 c.c. of 5% glucose in water. It must be given under

very careful supervision, and slowly—25 drops per minute should be maximum. There are contraindications; it must never be given to a woman who has had more than four children, as the possibility of spontaneous rupture is higher in these cases and it follows that the possibility of rupture following pituitrin stimulation is very much greater. It must never be given to a woman who has had an operation on her uterus, a myomectomy or previous section. A deep laceration of the cervix is also a contraindication, as is any form of cardiac disease. Incidentally, uterine inertia in a woman who has had four children or more, not responding in a reasonable time to simple rupture of the membranes, is probably best treated by section.

Very occasionally intravenous pituitrin does lead to violent contractions; these can be controlled by stopping the intravenous and administering Demerol intravenously, or ether by mask. Generally speaking the administration of intravenous pituitrin to these cases does lead either immediately or in the course of a very short time to regular and strong labour pains and usually a successful outcome. If, however, after a few hours of good labour pains no progress has been made it is an indication that there are other factors apart from the inertia to account for the previous lack of progress: in fact in these cases the inertia is a symptom of something else and again re-evaluation of the case is necessary.

There are two other conditions that should be mentioned as causes of prolonged labour; one is fairly common. It is the pituitary dystocia syndrome which is characterized by weak and irregular pains. This syndrome occurs in a certain type of patient. It is often possible to recognize these unfortunates when they first come into the office. They are short, fat, thick-necked, have a history of irregular menses, often also of relative sterility, and in spite of all efforts to the contrary, put on an excessive amount of weight during pregnancy. Their labours are very trying both to themselves and to their medical attendant. They usually require supportive treatment; intravenous pituitrin is often of help, and the indications for section may well be broadened. Even a persistent posterior in these cases may be an indication for section.

Another condition frequently mentioned as a cause of prolonged labour is cervical dystocia. I refer of course to the cervix that will not dilate. This is indeed a rare condition and there are

many of us who have difficulty in believing in its existence. It is probable that in nearly all of these cases there is some other factor that has been missed. If the cervix is long, thick and closed, even although the patient seems to be having labour pains, it is doubtful that she is in real labour.

#### PROGNOSIS

The outlook in subsequent pregnancies for women who have had long labours and who desire more children, is good. Most of these patients conceive readily and have normal easy labours, unless of course, the prolonged labour was due to cephalopelvic disproportion. However, there is a decreased desire for more children in many women who have experienced prolonged labour. A follow-up of 137 cases by Jeffcoate, Baker and Martin over a period of 3 to 13 years showed an incidence of subsequent pregnancies of only about 50%, and in more than one-third of the cases the infertility was voluntary. In consequence, it becomes obvious that very few women should be permitted to have prolonged labours.

#### CONCLUSION

The causes of prolonged labour are three:  
(1) Disproportion—It may be bony disproportion,

soft tissue disproportion, or cephalopelvic disproportion. (2) Malpresentation in one of its many forms. (3) Uterine inertia.

The treatment consists in making a diagnosis. Having made a diagnosis a decision on further treatment should not be difficult. If a course of watchful expectancy is decided on, supportive treatment is always necessary. This consists of at least 2,000 c.c. of intravenous fluids per 24 hours; preferably 5% glucose in water. Normal saline solution should never be given to a pregnant woman at term. At least six hours' rest per 24 hours is necessary, best obtained by the administration of morphine in  $\frac{1}{4}$  gr. doses; and antibiotics are indicated both for the sake of the mother and child, and early in labour if the membranes are ruptured.

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### THE CLOTTING MECHANISM IN ANGINA PECTORIS\*

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IT IS USUAL to find one or more old thrombi in the coronary vessels of cases of angina pectoris which are examined at post-mortem.<sup>1</sup> Undoubtedly the narrowed coronary artery lumen and the atherosclerotic alteration in the intima of these vessels play an important rôle in favouring thrombus formation. However, the possible rôle of another factor, namely altered coagulability of the blood, should be seriously considered in view of its existence in a wide variety

of states such as carcinoma and congestive failure.<sup>2, 3, 4</sup>

In an attempt to gather information about this problem the following study was carried out.

#### METHOD AND MATERIAL

Nine regular patients attending the cardiac out-patient department of the Boston City Hospital were chosen. All of these patients had the classical symptoms of angina pectoris. A successful therapeutic trial with nitroglycerine was present in all. Two patients had electrocardiographic evidence of an old myocardial infarction. One patient had a left bundle branch block, and one demonstrated a left ventricular enlargement pattern. The remainder either had evidence of myocardial disease in the E.C.G., or a normal pattern with S-T segment depression following the single or double two-step test as defined by Master.<sup>5</sup> None of the patients were in congestive failure clinically, and none demonstrated roentgenological evidence of pulmonary con-

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gestion. An arm to tongue circulation time using 2 c.c. of 50% magnesium sulphate was performed in all nine patients. In seven, the circulation time was less than 18 seconds (normal). In two cases the circulation time was borderline (20 and 21 seconds). Digitalis was not taken by any of the patients in this study.

Clotting studies were carried out in the hæmatological research laboratory of the First and Third Medical Services under the supervision of two of the authors (T.B. & F.S.). In all cases clotting time was determined by a standard technique in silicone coated tubes. Anti-thrombin titre was also determined in every case. Each time a patient was tested, similar studies were carried out on a healthy control taken either from the laboratory or medical staff.

RESULTS

A. *Clotting time.*—Five out of nine patients (55.6%) demonstrated a shortening of the silicone clotting time. Two patients had identical clotting times as the normal controls, while the remaining two patients had clotting times which were longer than the normal controls (see Table I).

TABLE I.

Patient*	Angina group		Control group	
	Silicone clotting time	Anti thrombin	Silicone clotting time	Anti thrombin
L.R.	18 min.	65%	60 min.	65%
M.S.	40 min.	75%	60 min.	65%
A.G.	75 min.	45%	45 min.	70%
A.A.	40 min.	53%	45 min.	70%
D.J.	70 min.	60%	45 min.	70%
E.F.	45 min.	75%	45 min.	88%
M.S.	85 min.	70%	85 min.	85%
P.M.	75 min.	60%	85 min.	85%
J.A.	65 min.	65%	85 min.	85%

\*Refers to angina group.

B. *Anti-thrombin titre.*—Seven out of nine patients had a lesser anti-thrombin titre than the normal controls. In one patient the values were identical, while the remaining one had an increased anti-thrombin titre.

DISCUSSION

Five out of nine patients with angina pectoris demonstrated significant shortening of their silicone clotting time as compared to normal healthy controls. These results suggest an increased tendency to clot formation on the part of these patients.

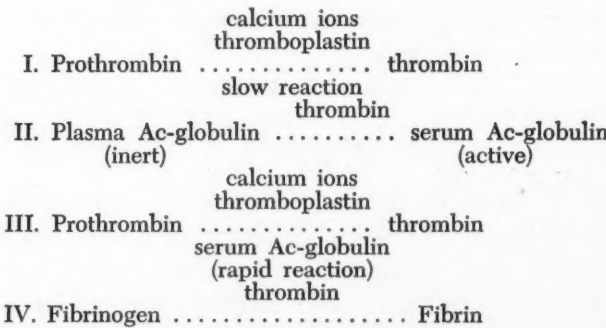
Patient L.R., aged 52, whose clotting time of 18 minutes as compared to a control of 60 minutes, represented the greatest clotting tendency, developed rapidly progressive coronary insufficiency at about this time. His "attacks" required increasing amounts of nitroglycerine and no longer responded to khellin, which had worked well previously. Repeated electrocardiograms showed no evidence of myocardial infarction, and no change from previous tracings.

One wonders in this case whether there might not have occurred thrombotic occlusions, not strategic enough to cause actual infarction of the myocardium, but of enough significance to create the existing coronary circulation more inadequate, giving rise to the above symptoms.

The two abnormally prolonged silicone clotting times occurred in females with familial hypercholesterolaemic xanthomatosis, (A.G. and D.G.). These two were the only patients with this disorder in the present group. We are not aware of any study demonstrating a diminished clotting tendency peculiar to this condition, and our results remain to be evaluated in terms of further experimental work.

The anti-thrombin determinations indicate that in this small series, the patients with angina pectoris have less anti-thrombin than normal controls.

The modern concept of blood coagulation,<sup>6, 7</sup> visualizes the following steps:



The finding of less anti-thrombin in the blood of patients with angina pectoris than in normal controls is an interesting finding, but its significance in the events of intravascular thrombus formation remains to be elucidated.

CONCLUSIONS

1. Five out of nine patients with angina pectoris showed a shortened silicone clotting time, indicating a greater clotting tendency than normal controls. It is emphasized that the series

is a small one, and that no definite conclusions are drawn inasmuch as two of the patients had longer clotting times than normal, although both of these patients belonged to a special category (familial hypercholesterolaemic xanthomatosis).

2. Seven out of nine patients with angina pectoris showed a smaller anti-thrombin titre in their blood than did normal healthy controls.

It is hoped that this work will act as a stimulus to further investigation in this field.

### CHRISTMAS DISEASE— A VARIANT OF HÆMOPHILIA\*

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HÆMOPHILIA is an uncommon but famous disease known to be transmitted through unaffected females to some of their sons. The well known sex-linked inheritance has been regarded as a highly characteristic feature of the disease and the establishment of the peculiar family history supports the diagnosis. In this condition spontaneous bleeding tends to recur in episodes separated by periods of freedom. Bleeding frequently takes place into joints and, in time, painful deformities may develop. Minor wounds and removal of teeth and tonsils have often proved fatal to patients with hæmophilia. The high mortality in young males before they reach the reproductive age would cause the disease to become extinct if new cases were not continually appearing without family history. Approximately 40% of hæmophiliacs lack a family history<sup>1</sup> and in these the disease is considered to arise by mutation.

The bleeding tendency in hæmophilia has been attributed to an inherited deficiency<sup>2</sup> or unavailability<sup>3</sup> of a plasma factor called anti-hæmophilic globulin. Recently, certain cases of "hæmophilia" have been described<sup>4,5</sup> whose blood, on being added to that of a classical hæmophilic, shortens the prolonged clotting time. This finding indicates the presence of anti-hæmophilic globulin in their blood and suggests the lack of another clotting factor. The proper-

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ties of this factor clearly distinguish it from anti-hæmophilic globulin. Macfarlane and Biggs<sup>5</sup> have named the newly recognized disorder Christmas disease after the surname of their first patient. Aggeler and his co-workers<sup>6</sup> have called the factor plasma thromboplastin component (P.T.C.) and refer to its lack as P.T.C. deficiency. It appears likely that P.T.C. deficiency and Christmas disease are identical.

The thromboplastin generation test of Biggs and Douglas<sup>7</sup> has provided a simple and precise method of detecting a deficiency of either anti-

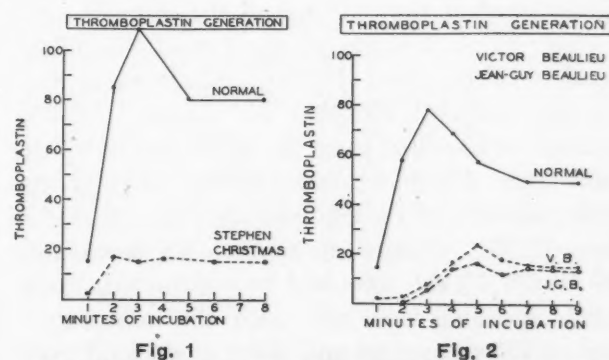


Fig. 1.—In the lower curve, serum from S.C. was substituted for normal serum. Fig. 2.—Serum from V.B. and J.G.B. was substituted for normal serum.

hæmophilic globulin or Christmas factor. This test is based on the principle that normal thromboplastin formation requires the interaction of platelets, antihæmophilic globulin and Christmas factor. Washed platelets suspended in physiological saline are mixed with aluminum hydroxide-treated plasma which contains anti-hæmophilic globulin and serum which provides Christmas factor. When these factors are normal, and calcium is added to the system, thromboplastin generation reaches a peak in three or four minutes (Fig. 1). If serum from a patient

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with Christmas disease is substituted for normal serum in the test, thromboplastin formation is greatly reduced due to the lack of Christmas factor (see Fig. 1—Stephen Christmas).

Fourteen patients previously considered to have classical hæmophilia have been studied by means of this test. Four of these patients have been found to lack Christmas factor. The first two patients belong to a French-Canadian family (Fig. 2). This particular family was investigated in 1950 and the sex-linked inheritance of the bleeding tendency was clearly shown.<sup>8</sup> Clotting time and prothrombin consumption of the affected members were found to be either normal or slightly abnormal. Spontaneous bleeding was uncommon. The third patient had a greatly prolonged clotting time and a history of repeated episodes of joint, intestinal and renal bleeding. The fourth patient was an eleven year old boy without a family history of bleeding, who bled profusely following circumcision at the age of two weeks. Recently, hæmorrhage following tooth extraction was so severe that he was admitted to hospital. In these four cases the addition of hæmophilic serum to the mixture caused marked improvement in thromboplastin generation. When serum from the original Christmas patient was added, no improvement resulted, indicating that they all lacked the same factor.

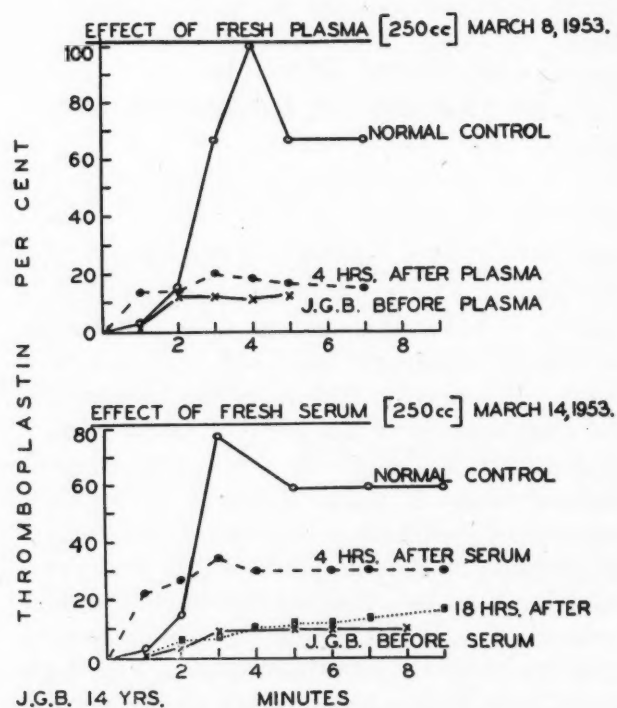
One of the members of the French-Canadian family, J.G.B., aged 14, was admitted to the Toronto General Hospital on March 3, 1953, because of bleeding from the gums and frequent toothaches. Advanced dental caries and gingivitis were present and radiographs showed apical disease. It was decided to remove six teeth and on March 13 the first one was extracted. Only minor bleeding occurred with the administration of 250 c.c. serum and 500 c.c. of blood over a three-day period. Encouraged by this, the other five teeth were removed on March 21. Treatment consisted of local pressure, application of topical thrombin and transfusions of 2,750 c.c. of fresh serum and 6,500 c.c. of whole blood. Despite these measures, troublesome bleeding continued for a week.

#### DISCUSSION

From the standpoint of treatment it is of the greatest importance that this disease be recognized. Whole blood, plasma and serum all contain Christmas factor but the commercial preparation of anti-hæmophilic globulin, supplied for

the treatment of hæmophilia, has no value in this condition. In the patient mentioned above (J.G.B.), administration of serum improved thromboplastin generation more effectively than fresh plasma (Fig. 3). This indicates that serum provided more Christmas factor than fresh plasma. The benefit following 250 c.c. of serum had disappeared eighteen hours after it was given.

In contrast to anti-hæmophilic globulin, Christmas factor is stable when stored so it is not necessary to use fresh blood, plasma or serum for the treatment of this condition. Tests made



J.G.B. 14 YRS.  
Fig. 3.—Comparison of effects of plasma and serum in treatment of patient J.G.B.

on dried serum failed to show the presence of the Christmas factor.

Hæmophilia and Christmas disease resemble one another in many ways. They are transmitted in the same way, although often there is no family history. Each disease shows both a mild and a severe form. In the case of J.G.B., who was suffering from a mild form of Christmas disease, multiple tooth extractions carried a considerable risk. It was not possible to control his bleeding completely or to correct the defect in the thromboplastin generation test.

#### SUMMARY

1. Christmas disease is a condition clinically indistinguishable from hæmophilia but due to

deficiency of a clotting factor that is different from antihæmophilic globulin.

2. The thromboplastin generation test is a simple and precise method of detecting deficiency of this factor.

3. Using this test, fourteen patients considered to have hæmophilia were studied: four were found to have Christmas disease.

4. Hereditary transmission of Christmas disease is identical with the transmission of hæmophilia but, as in hæmophilia, cases may arise spontaneously.

5. The differentiation of this condition from hæmophilia is of particular importance in regard to treatment. Plasma, blood and serum all contain Christmas factor and temporarily improve

the clotting mechanism in patients with this disorder. Antihæmophilic globulin preparations and dried serum are of no value.

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### TRANSPOSITION OF THE GREAT ARTERIES WITH PATENT FORAMEN OVALE

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THIS ANOMALY is quite uncommon and presents a great change in the pattern of blood flow. Since the aorta arises from the right ventricle, and the pulmonary artery from the left ventricle, while the venous return is that found naturally, we are confronted with a circulatory picture in which the left heart is entirely occupied with pulmonary circulation and the right heart with peripheral circulation. Such a picture, of course, would be incompatible with life as the peripheral circulation would be entirely devoid of oxygenated blood, were it not for the patent foramen ovale at which the necessary "mixing" takes place.

The foramen ovale ordinarily closes at birth with the relative increase in the left auricular (peripheral) pressure over that of the right (pulmonary) pressure. In this anomaly, since the right heart is the peripheral one, the foramen ovale by virtue of the anatomical features of the valve, cannot close. The heart enlarges grossly within the first few weeks, and by this time the foramen ovale has dilated until it has, for all practical purposes, lost whatever valvular structure it had at birth.

This abnormality is often associated with a patent ductus arteriosus; or with an interventricular septal defect. When either or both of these are present there is far less cyanosis because of a greater degree of mixing of oxygenated and de-oxygenated blood between the aorta and pulmonary artery or between the two ventricles.

The anomaly as described in this paper is, to quote Maude Abbott, "the worst conceivable as compatible with life", and causes the most extreme form of congenital cyanosis that can occur.

The remarkable point about the case here described is that, with only patency of the foramen ovale and without any ductus arteriosus or ventricular septal defect, the patient lived for 19 years.

A 19-year old male was first seen by the author on May 22, 1947, complaining of constant pain in the chest. He was markedly undeveloped, weighed about fifty pounds and, in general, resembled a poorly-developed twelve-year old. The extremities were very thin and, except in oedematous areas, his joints appeared very prominent by comparison. The hands, wrists, feet and ankles were swollen, and this was particularly marked in the lower legs almost up to the knees. He was generally cyanosed, dyspnoeic and was coughing intermittently. The lips and finger tips were cyanosed and the latter demonstrated an extreme degree of clubbing. Large moist râles were present over both entire lung fields. The liver edge was down a full hands' breadth and was noticeably tender and fairly firm. The area of cardiac dullness was greatly enlarged and the left border extended well towards the axillary line. The right border could be percussed about 1½" to the right of the sternum. A loud blowing systolic murmur could be heard over the entire precordium; and the point of maximum intensity seemed to be somewhere in the region of the

third left interspace. The blood pressure was 72 over 55 in both arms and the pulse 136.

Examination of blood revealed: sedimentation rate of 12 mm.; haemoglobin 64%; colour index 0.08; white blood cells 19,000; N.P.N. 51 mgm. %; creatine 1.5; total protein 8.6%. The urine contained a heavy trace of albumin with a few red blood cells and many hyaline casts.

The sensorium was noticeably clouded on admission to hospital; but both this and the extreme cyanosis were somewhat relieved by oxygen therapy. After three days of diuretics and symptomatic therapy he had improved enough to allow an electrocardiogram (Fig. 1). This showed marked right axis deviation with some notching of QRS in the limb leads, elevated ST 1 and depressed ST 2, 3 and 4; with T 2, T 3 and T 4 inverted. There was regular sinus rhythm and P-R interval of 0.26 seconds. In general the graph was consistent with "right ventricular strain".

After five days he was well enough for radiological investigation (Fig. 2). Fluoroscopic investigation showed massive enlargement of the entire heart shadow with weak pulsations at all borders and subtotal obliteration of retrocardiac space. No indentation or constriction of the oesophagus was demonstrated, but the patient declined to swallow sufficient barium to satisfy the radiologist on this point. The upper left border showed a marked concavity and the widening of the base obscured the outline of the aortic knob. Although the patient's position was shifted on fluoroscopic examination, it could not be determined, because of the width of the base shadow, whether or not there was a significant difference between the anterior-posterior shadow of the great vessels and that seen in the left anterior-oblique position.

There was no rhythmic variation in the size of the right auricle independent of the cardiac rate.

Although the patient was returned to the oxygen tent his condition steadily deteriorated, and he died twelve days after admission in congestive failure.

**Autopsy** (Dr. Fred Luney).—The heart was greatly enlarged, the transverse diameter measuring 18 cm. and vertical diameter 12 cm. The transverse diameter of the thoracic cage was 23 cm. Approximately four oz. of bloody fluid was found in the pericardial sac. As the heart lay *in situ* one could see that the superior and inferior vena cava were large, thin-walled and bulging, and that they entered a greatly dilated right auricle. The right auricular appendage was also greatly dilated. The aorta was directed upwards and to the left, lying in front of the pulmonary artery. The anterior surface of the heart consisted almost entirely of right auricle and ventricle.

On internal examination one could see a large opening between the auricles (probably a patent foramen ovale) measuring 3 cm. by 1.5 cm. The tricuspid valve was greatly thickened and shortened measuring 8 cm. in circumference. The margins were thickened, rigid and greyish-yellow and bore a succession of small, warty, firm vegetations near the free margin. Opaque greyish-yellow patches of atheroma were present on the auricular surface adjoining the valve margins. The chordae tendineae were shortened and permitted very little free movement of the margins of the cusps. The right ventricular wall was from 15 to 25 mm. in thickness. The myocardium was pale and showed greyish streaks of fibrous tissue throughout. The endocardial surface showed marked trabeculation. The pulmonary veins were smooth-walled and large and entered the left auricle. The left auricle was not dilated and the left auricular appendage was small and inconspicuous. The mitral valve was normal and 10 cm. in circumference. The left ventricle was greatly dilated but not hypertrophied measuring 10 to 12 mm. in thickness. The interventricular septum was intact. The pulmonary valves were normal, and the orifice measured 7 cm. The pulmonary artery was large and directed upward and to the right, passing behind the ascending limb of the aorta. The circumference of the aortic valve was 6 cm. and there was no patent ductus arteriosus.

The diagrammatic illustration (Fig. 3) illustrates the course of the circulation. It will be noted that the left heart was purely concerned with pulmonary circulation; while the right handled the peripheral circulation. The only "mixing" possible was that which took place at the large foramen ovale. It was found that the right auricle was greatly dilated, and the right ventricle showed a great degree of both relative and absolute hypertrophy which was compatible with maintaining a peripheral circulation for nineteen years.

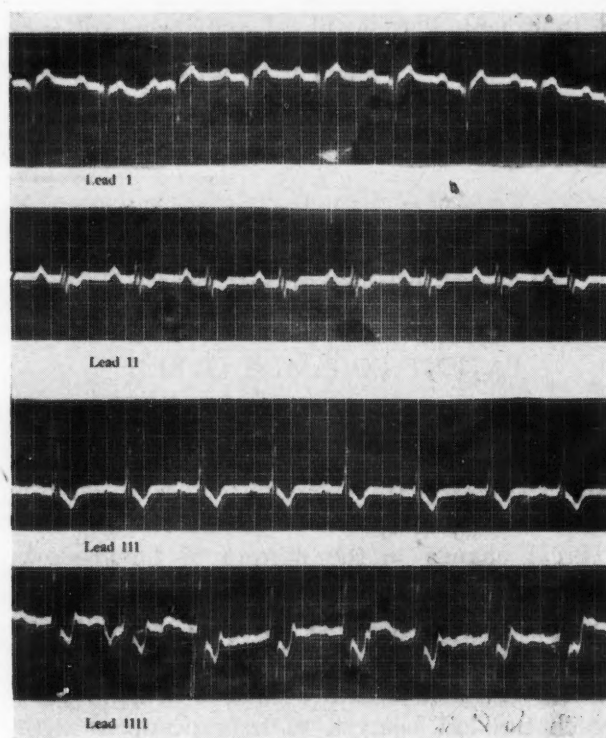


Fig. 1

#### DIAGNOSIS

The significant diagnostic features are: (a) Very marked cyanosis over the entire body in cases such as the one described herein, and over all of the body above the brim of the pelvis in those cases in which there is a patent ductus arteriosus. (b) Marked cardiac enlargement beginning immediately after birth. (c) Absence of the "bulge" over the normal location of the pulmonary conus in A-P fluoroscopy and marked broadening of the shadow of the great vessels at the base when the patient is rotated into the left anterior oblique position.

Murmurs and thrills are completely ignored in establishing diagnosis.

This anomaly can be confused with an extreme tetralogy of Fallot. At birth, in both cases, one sees a marked cyanosis with no cardiac enlargement; but in the former, cardiac enlargement may be noted as early as four to six days of age, and great enlargement in a few months. No other malformation causes such marked enlargement so soon. Anomalous pulmonary venous return into the right auricle shows a markedly dilated pulmonary conus.

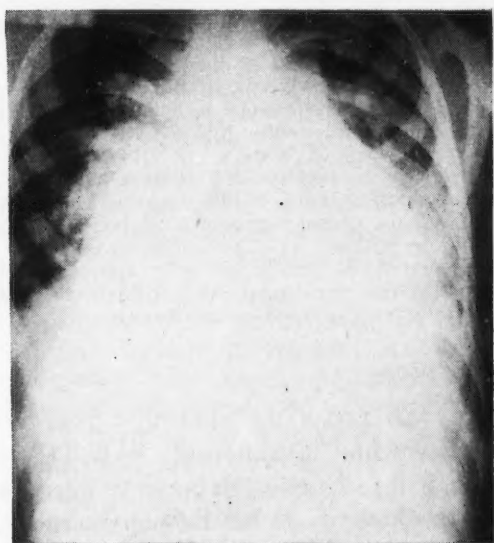


Fig. 2

In cases in which the left descending coronary artery arises from the pulmonary artery there is a prominent pulmonary conus and a weak low voltage in the electrocardiogram.

If this anomaly were accompanied by an inter-ventricular septal defect of any appreciable size there would have been less cyanosis. If it had been accompanied by a patent ductus arteriosus, the latter would have added relatively oxygenated blood to the descending aorta and the lower extremities would be less cyanotic than the upper extremities. Since the internal mammary arteries and the superficial epigastric arteries which supply the skin of the thorax and abdomen arise from the subclavian arteries the line of demarcation of the cyanosis lies at the brim of the pelvis, as observed by Taussig, in five cases. However, in the case under discussion, the cyanosis was quite general.

The prognosis is quite poor, many dying from anoxæmia during the first few days, or in congestive failure subsequently. The average duration of life in 31 cases described by Abbott is

one and three-quarter months, and the highest age eleven years.

#### EMBRYOLOGY

The only satisfactory explanation for this anomaly is that advanced by Spitzer. This is briefly summed up by Maude Abbott as follows:

"Spitzer's theory claims that early arrest in the bulbar region of the primitive heart tube inevitably interferes with the clockwise torsion that

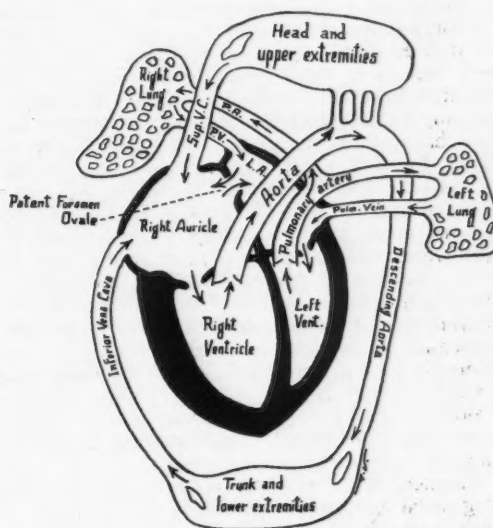


Fig. 3

takes place in this region in normal growth; that such lack of torsion (*i.e.* detorsion) will result in the obliteration of the normal human (left) aorta, and the persistence of the reptilian right aorta, which is evanescent in the human embryo but now appears in permanent form as the 'transposed' vessel, standing in abnormal relation to the pulmonary artery and the other right ventricular structures; and that this phylogenetic survival of an atavistic structure and its development on an ontogenetic basis are the actual causative factors."

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305 Oxford St.

We must put up with our contemporaries, since we can neither live with our ancestors nor posterity.—Geo. Eliot.

## Case Reports

### PENICILLIN REACTION WITH RECURRENCE AFTER INJECTION OF TABTD

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W.L., male aged 20, complained of chills, backache, pains in the joints, a head cold and unproductive cough. He was treated with aspirin, nose drops, and steam inhalations, but four days later developed night sweats with frontal headache and post-nasal discharge. On examination, 4 days after the start of the illness, he was found to have nasal congestion with deviation of the septum to the left, and the left maxillary sinus was opaque on transillumination. Radiography revealed cloudiness of the left maxillary sinus in keeping with a diagnosis of acute sinusitis. *Strep. viridans* and *Staph. pyogenes* were cultured from a nose swab: both organisms were sensitive to penicillin and to streptomycin.

He was admitted to hospital and received dicrysticin 1 ml. intramuscularly twice daily for four days (300,000 I.U. procaine penicillin G, 100,000 I.U. buffered crystalline potassium penicillin G, 0.5 g. dihydrostreptomycin sulphate per 2 ml.: Squibb). The temperature fell to normal and the local symptoms and signs subsided: he was discharged from hospital 5 days after admission.

He returned to work but noticed on the evening following discharge and continuously for the next 3 days, that both buttocks were itchy at the sites of the dicrysticin injections: on the fourth day after discharge there was painful swelling of both buttocks and itching wheals appeared on the back of the left thigh and on both arms.

Five days after discharge, he was found to have tender red indurated patches on both buttocks, white wheals and itching red indurated swellings up to 3" diameter on the hands, arms and trunk. He was treated with pyribenzamine 50 mgm. three times daily and calamine lotion with 1% menthol locally. Next morning he complained of sleeplessness from itching, nausea and mild vomiting, pain, stiffness and swelling of the knees and fingers. He was re-admitted to hospital, 6 days after discharge and 11 days after the first injection of dicrysticin.

On examination, the temperature was 100.8°, pulse 120, respiration 22. There were marginated white patches with raised borders surmounting indurated dusky red swellings in the skin of the scalp, forehead, left upper eyelid, both arms, both legs and trunk. There was swelling of the dorsum of the right hand and stiffness of both knees with movement limited by pain. A small effusion was detectable in the left knee joint. There was slight tenderness on pressure over the maxillary sinuses but no post-nasal discharge was seen. There were no abnormalities in the chest, abdomen, or central nervous system. The urine and a radiograph of the chest showed no abnormality.

Pyribenzamine was discontinued, and cortisone acetate was given by mouth, 100 mgm. 8 hourly for 1 day, 100 mgm. 12 hourly for 1 day, then 100 mgm. daily. He was weighed daily and given a diet containing less than 0.5 gm. sodium chloride per day. Next day there was pain with stiffness in the right shoulder, both knees and both wrists. Polymorphic marginated wheals on indurated bases could be seen appearing and disappearing during the course of a few hours on the face neck and scalp.

\*Flight Lieutenant, Royal Canadian Air Force.

Massive painful pitting oedema of the arms appeared and a dusky red erythema appeared on the palms, soles and back. During the next 3 days there was no increase in weight: the rash faded leaving a faint brown desquamation, and the symptoms and signs in the joints subsided.

Cortisone therapy was stopped on the sixth day and the same afternoon there was recurrence of stiffness of the wrists and fingers, and erythema appeared on the face and feet. Cortisone acetate 100 mgm. was given daily for 4 more days (total dosage 1,400 mgm.) Slight itching erythema of the trunk and of the palms and soles continued for 2 more days: 16 days after admission he was discharged symptom-free.

Eleven days after discharge from hospital he received a routine inoculation of TABTD (typhoid-paratyphoid vaccine, tetanus toxoid and diphtheria toxoid adsorbed on aluminum phosphate: Connaught Medical Research Laboratories), 0.5 ml. by subcutaneous injection. Next day he developed itching erythema of the palms, soles and trunk, pain and stiffness in the hands, fingers and knees, and generalized colicky abdominal pain. He was admitted to hospital: with symptomatic treatment the symptoms subsided in 3 days.

Subsequently a scratch test was performed using dicrysticin solution 1 in 10,000: no local reaction occurred to test or control patches but 2 hours after application of the patches he experienced nausea, and itching erythema of the palms and soles appeared. Later a scratch test was performed with dihydrostreptomycin sulphate solution 1 in 1,000 without response.

### DISCUSSION

There was no doubt clinically that the reaction following injection of TABTD closely resembled the reaction following injection of penicillin. Once a cell has become sensitized to a particular antigen it tends to make a similar response to other members of the same chemical family: thus cross-sensitization may occur with drugs having an amino group in the para-position such as sulfonamides, local anaesthetics of the benzocaine and procaine type, paraphenylene diamine, para amino benzoic acid and para amino salicylic acid.<sup>1</sup>

It does not appear that any chemical substance is common to dicrysticin and TABTD. Whatever the mechanism may be, it appears clear that this form of preventive inoculation should not be employed shortly after a severe sensitization reaction to penicillin.

I wish to thank the Director of Medical Services (Air) for permission to publish, and Dr. H. A. Dixon for his kind advice.

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Nothing exposes us more to madness than distinguishing ourselves from others, and nothing more contributes to maintain our commonsense than living in community of feeling with other people.—Goethe.

## Special Article

### THE NURSES' TRAINING EXPERIMENT

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THE FIRST WELL-ORGANIZED and adequately financed effort to provide improved training for the clinical nurse began in January, 1948, and concluded in September, 1952. This experiment or "demonstration", as its sponsors preferred to call it, was initiated and conducted by a committee of the Canadian Nurses' Association. It was financed, for the first four years, by an annual grant of \$40,000 from the Canadian Red Cross Society and, for the remaining months, by the Ontario Department of Health. In addition, the Windsor Metropolitan Hospital provided the building and such services as power, heat and laundry.

The purpose of the experiment was to determine if nurses could be trained satisfactorily in approximately two years, provided that the school was conducted on sound educational lines, had full control of the time of its students and was concerned with hospital wards only as a source of clinical practice. It was felt that a shorter training period, under pleasanter conditions, would give an impetus to nursing recruitment.

The experiment was conducted in association with the Windsor, Ont., Metropolitan Hospital, the wards of which were made available for medical, surgical, obstetrical and paediatric nursing practice. Additional practice in paediatrics was secured at Hotel Dieu, Windsor, and the Hospital for Sick Children, Toronto, and affiliations provided psychiatric training at London Mental Hospital, and tuberculosis at Essex Sanatorium.

In order to secure an independent judgment of the School's success a joint committee of the Canadian Education Association and the Canadian Nurses' Association was asked to undertake an evaluation. The committee included the Chief Director of Education, Ontario; the Deputy-Minister of Education, Saskatchewan; the Statistician, National Cancer Institute; Directors of University of Toronto, University of B.C. and Institut Marguerite d'Youville Schools of Nursing; Director of Nursing, Department of Veterans' Affairs; the Presidents and Executive Secretaries of the C.E.A. and C.N.A. Its instructions were to "determine whether the School had or had not produced as well-trained nurses" as the usual type of three-year school.

There are no generally accepted detailed standards for Canadian schools of nursing. A three-year course is always required but each

Province has its own regulations concerning curricula and clinical practice. These regulations are often phrased, as in Ontario, in such broad terms that marked differences in their interpretation are common. By way of illustration, each of the four schools examined used different forms for recording student achievement and some omitted matters of importance.

The procedure followed by the joint committee was in two phases. First, a complete examination was made of the Demonstration School. This included the curriculum, all details of clinical practice, costs, and academic, health and progress records of all students who had attended since its opening. The second stage saw a similar examination of three "control" schools of the three-year type, two in Ontario and one in Saskatchewan, which were highly recommended by Provincial authorities. Comparisons were then made.

The essential parts of the Demonstration School two-year program were: (a) a preliminary term of 14 weeks devoted entirely to instruction in sciences and an introduction to nursing principles; (b) 30 weeks of continuous practice in medical-surgical nursing, accompanied by instruction in the theory of these fields; (c) 27 weeks of similar practice and instruction in obstetrics-pædiatrics; (d) 12 weeks of psychiatric training; (e) 4 weeks of tuberculosis training; (f) 6 weeks of clinical teaching and ward administration; (g) 10 weeks' vacation.

A "week" was six days, Sundays being free during the greater part of time. During the preliminary term 21 hours of lectures were scheduled and for the rest of the course the weekly load of lectures and ward duty was usually 30 hours.

*The curriculum of the demonstration school required fewer courses and hours of instruction than those of "control" schools. Its graduates received higher marks in registered nurses' examinations and were better prepared to undertake postgraduate study.*

The Demonstration School offered 22 compulsory courses including tuberculosis and psychiatric nursing. It did not include chemistry or diet kitchen by name but elements of these, considered to be necessary, were given in psychology and nutrition. Neither mental health nor public health were formal courses but their principles permeated the entire program. 705 hours of instruction were required, exclusive of time for study and clinical teaching on the wards.

The three "control" schools listed 42 courses and 879 hours, 54 courses and 932 hours, and 36 courses and 810 hours respectively. The differences in number of courses were due to varying practices in the subdivision of topics and these, in turn, required more hours chiefly because of duplication of material. One school provided an option of either psychiatric or tuber-

culosis affiliation, a second psychiatric training for one-fourth of its students and the third could offer neither.

There are two reasons for believing that the demonstration school program was adequate. The first is that every important topic in control schools was also found in the Demonstration School. The second is the results of Registered Nurses' examinations which, since they constitute the final hurdle which a student-nurse must clear, may be assumed to measure all the theoretical knowledge that she requires. The average marks in all subjects, secured by all students in the four schools during three years were: Demonstration School, 76.4%; control schools, 70.7, 70.5 and 69.7%.

From an educational standpoint the relatively light student load, particularly in the first term, merits attention. When a student has 20 hours of lectures in a week or six hours of lectures and 24 hours of ward duty she has plenty of time for both recreation and study and instructors are justified in providing assignments requiring considerable preparation. These, in turn, make it possible to use class-discussion methods instead of lectures and memorization.

A student in a control school with 30 lectures in 12 subjects and 10 hours of ward duty in a week does well if she memorizes her notes. Such "training" may enable her to pass essential examinations but for the average one is poor preparation for future post-graduate work. It is relevant that universities limit their students in Arts to 15 hours of instruction per week on the assumption that each of these requires at least one hour of preparation.

*Graduates of this school received continuous clinical experience in each of the major hospital fields. Each was given the same total amount of practice, the same amount in each field and, with minor variations, with the same types of physical conditions.*

Clinical practice, the most important part of a nurse's training, must provide for a wide range of procedures in each of the major hospital fields, for sufficient repetition of each to ensure competency and for constant and thorough supervision.

In estimating the worth of such training in any school the word "average" must be used with care since it often represents merely the mean between two widely separated extremes. Fortunately practice in the Demonstration School was so organized that the experience of one student did not vary from that of another to any appreciable extent. Such a typical student nursed 57 patients (32 women and 25 men) with 45 separate types of disability for periods ranging from 2 to 16 days. She spent 4 weeks in the operating room during which she observed or assisted in 37 operations. Three weeks were spent in the delivery room and 4 weeks in the nursery.

She shared in 17 deliveries and cared for 42 mothers.

These experiences were assigned by the instructor of the appropriate clinical theory whose aims were to give each student sufficient time to establish understanding of and confidence in a special kind of treatment and to provide as many distinct types as possible. A careful organization and detailed records were maintained to achieve these purposes. This instructor also supervised all student practice in her clinical fields and arranged for clinical teaching on the wards whenever circumstances made it desirable. She was always immediately available when students were on duty. The system provided thorough training with close and repeated attention to detail.

"Control" schools provided about twice as many hours of practice for all students and provided it with thoroughness, close attention to detail and under constant supervision. An analysis of their practice, however, showed marked differences in the amount of time which individual students spent in the different hospital departments.

In one school the number of 8 hour day "shifts" in medical-surgical wards ranged from 333 to 543 and in obstetrics-pædiatrics from 140 to 217. In another which had a busy emergency department, the range in medicine-surgery was 297 to 379, in obstetrics-pædiatrics 98 to 233 and in "other departments" 160 to 236. Night nursing had such wide variations as 22 to 239 and 4 to 84.

In the three schools the least number of day "shifts" spent by any student in medicine-surgery was 297 and the most 543; in obstetrics-pædiatrics 98 to 263. The ranges in night nursing for medicine-surgery were 10 to 239 and for obstetrics-pædiatrics 4 to 84.

It is important to know whether a student's practice was spent in nursing a few types of disability a great many times or a larger number fewer times. In the only school where this information was available one student, who was probably typical, nursed 420 medical-surgical patients, representing 62 types of disability for a total of 415 shifts. She had, of course, several patients on every shift.

Twenty-six types, each represented by one patient, required 176 shifts. Nursing practice ranged from two shifts for each of carbuncle, contusion, delirium tremens, meningitis, prolapse and renal colic to 16 for each of adhesions and cholecystomy.

At the other extreme 252 patients suffering from 10 disabilities provided practice totalling 2,030 shifts. Dilatation and curettage topped the list with 51 patients and 203 shifts while 45 fractures were given 582. This student nurse had less than 10 patient-days' practice in each of 23 conditions but she also had from 50 to 582 patient-days in each of 17 others.

Nursing schools of the traditional type exist to train nurses and to service hospital wards. When these two purposes are in conflict it is inevitable that the school should suffer, for the well-being of the patient must have precedence. It is beyond doubt that a considerable, though unmeasurable, part of clinical practice is unnecessary for purely training purposes. It is also probable that most nurses have received insufficient experience in one or more conditions.

*The most important single criterion in the evaluation of any professional school is its degree of success in integrating theory with practice. In the demonstration school integration was usually immediate and complete.*

Demonstration School students received all lectures in medicine, surgery and allied nursing during their 30 weeks of clinical practice in these fields. Similarly obstetrical, paediatric, psychiatric and tuberculosis practice were carried on in the same weeks as the theoretical phases. Integration went further than this whenever possible—and it was usually possible—by having the subject under discussion in a lecture immediately available on the ward. Sometimes the presence of a patient with an unusual condition made it necessary to introduce the appropriate theory even though it might be out of its ordinary sequence. Such integration was of outstanding educational value. It is relatively easy to

while lectures in gynaecology were also in the second year but practice in the first.

Another school, organized on the "block" system, provided four weeks of continuous instruction in each of the three years. A considerable general relationship was maintained between the subjects of each "block" and the clinical experience in that year. Instruction in medicine and surgery were in first and second years and practice in all three years while both phases of obstetrics and paediatrics were in second year although the "nursery" came in first year.

Clearly there were many occasions when much time elapsed between the presentation of a condition in a classroom lecture and its identification in a patient. The problem of integrating theory with practice which may not occur for several months or which did occur some time earlier, is so difficult that it is not surprising a solution is seldom found.

*Students of the four schools were about equal in ability and academic standing at admission. In the demonstration school health records were better and fewer withdrew before graduation.*

A general impression was found that demonstration school students were a highly selected group. To discover the facts the university matriculation records of all students, in the four schools during this period, were analyzed. They were as follows:

TABLE I.

	Demonstration school	School "A"	School "B"	School "C"
Percentage who secured from 75% to 100%.....	18	18	40	16
" " " " 67% " 74%.....	30	24	23	26
" " " " 60% " 66%.....	17	24	16	22
" " " " 50% " 59%.....	35	34	21	36

Withdrawal records speak for themselves:

TABLE II.

	Demonstration School	School "A"	School "B"	School "C"
Number admitted.....	96	213	115	127
Number graduated.....	87	161	90	88
Percentage withdrawn.....	9.4	24.4	21.7	30.7

achieve in a school which had to organize only two classes at any time.

The fact that control schools must schedule six separate classes for lectures and practice means that, despite excellent organization ability, any considerable degree of integration is impossible. When, in addition, the service needs of the hospital must be met lectures and practice have to be scheduled as separate entities.

In one school lectures in medicine and surgery occurred during the last half of the first year and practice in all three years; lectures in obstetrics were in the second year and practice in the third

The health records of demonstration school students was an impressive one. From January 19, 1948, until October 31, 1951, 90 students were absent from ward duty or lectures for a total of 263 days. This meant an average attendance of 99.39%.

*Nurses in the demonstration school were trained better and under much easier conditions for about two-thirds of "control" school costs but the training was paid for chiefly in cash from external sources and not in services.*

Comparisons of nursing school costs are unreliable because of the absence of uniform methods of hospital accounting and, even more, because auditors employ different bases in distributing costs among hospital departments. Laundry costs for a school, for example, will vary by as much as 25% depending on whether the basis is "bed occupancy", "poundage" or "physical count".

Fortunately at Windsor all school costs were separated from those of the school except for provision of the residence building and heat, power and laundry. Including these, the per capita was \$1,250 and the full cost of training one nurse was \$2,500.

The student paid \$100 of this in cash, the Metropolitan Hospital paid about \$730 and the Canadian Red Cross Society (and, latterly, the Ontario Department of Health) paid the balance. It must be added that, for its contribution, the

hospital received student nursing services worth \$680.

According to their own cost analyses "control" schools spent as an average, \$1,300 per student, per year or \$3,900 per graduate. This was paid, in large part, by the services of the student, which were found to vary, among the three schools, from 75% to more than 100%. Any balance which ultimately remained was unwittingly contributed by the "paying patient".

The conclusion is inescapable. When students can be graduated in two years instead of three and when, in addition, they can receive their training under conditions closely resembling those in a good residential college, it is reasonable to expect a marked increase in their numbers. But, a new source of revenue must first be found.

## Clinical and Laboratory Notes

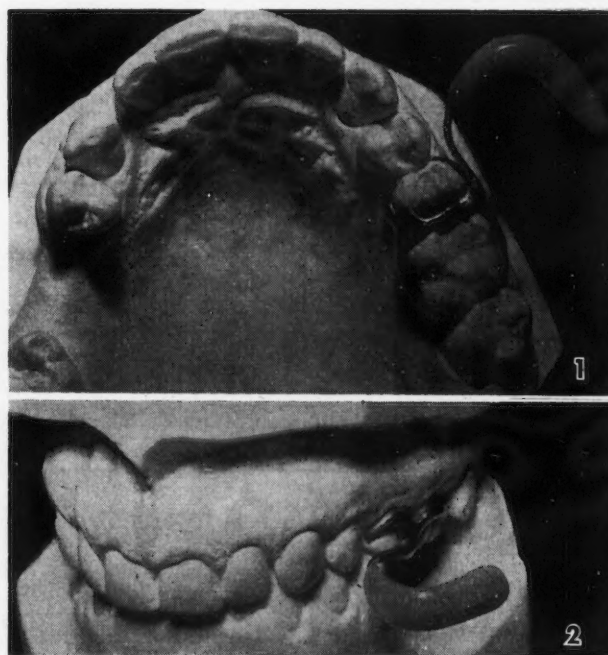
### AN INTRA-ORAL APPLIANCE FOR FACIAL PARESIS

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TWO OF THE MOST distressing aspects of facial paresis are the unattractive appearance the patient presents and the inferiority complex that often follows. Nor is his appearance improved by the cumbersome and ugly appliances used to retain the sagging and paralyzed muscles in their normal position and to counteract the pull of the opposing facial muscles. Such conspicuous appliances, when worn during a treatment period of a few weeks or months, can make the patient acutely self-conscious; how discouraging it must be for those who are left with a partial or complete paralysis and who must anticipate wearing a corrective appliance for the rest of their lives? For such patients the extra-oral methods now in use are a continuing source of annoyance and embarrassment.

The intra-oral appliance to be described has the advantage of being less conspicuous and, therefore, less embarrassing to the patient. It is comfortable, non-irritating to tissue, does not damage the teeth, is of simple construction and is easily cleaned. We consider it would be a useful

adjunct in the treatment of Bell's palsy, or any other paralysis of the facial muscles. Dental sepsis is considered as one of the contributing causes of Bell's palsy, but with an intraoral appliance the teeth, rather than being associated only with the etiology of the disease, can—by supporting the appliance—be put to a positive use.



Figs. 1 and 2.—Models showing appliance inserted on teeth.

The construction of an intra-oral appliance requires the services of a dental surgeon, but it is believed that the benefits conferred on the patient are well worth this extra effort. Before construction of the appliance begins, an impres-

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sion of the maxillary teeth is taken and the normal position of the corner of the mouth marked on the model. The clasps are designed on the same model and then cast, and a No. 14-gauge gold platinum wire spur is soldered into place. The clasp is inserted into the mouth so that the spur wire can be adjusted to where it will hold the corner of the mouth in its normal position, after which the appliance is removed and the spur wire covered with lucitone. The whole is polished to give a smooth surface and the appliance is ready for insertion (Figs. 1, 2 and 3). (The fact that the two left mandibular teeth were missing had nothing to do with the construction of the appliance. These teeth were absent prior to treatment).

This method can be used equally well when a patient has a full complement of teeth. There is usually sufficient room between teeth of normal occlusion to accommodate a clasp of this type. In rare instances, where there is not quite enough room, the contact surfaces of the adjacent teeth may be reduced with a dental stone and enough room provided without injury to tooth structure.

The prescribed attachment or spur wire is of adequate strength to maintain the paralyzed cheek muscles in normal position. The clasps are cast to the posterior teeth and are not visible. The appliance is removable, like any partial denture, and easily cleaned. It is obviously not bulky and if broken it can easily be repaired or remade. During mastication of food it will not be awkward because the patient probably already has formed the habit of chewing food on the unaffected side of the mouth.

Where full or partial dentures are worn, the same mechanical principles will apply—the spur wire, instead of being attached to clasps, would be cured into the denture acrylic. It is felt that this appliance should prove to be a very useful adjunct both for the temporary and permanent care of patients afflicted with this very distressing facial malady.

#### CASE REPORT

Mrs. J.S., white, age 34, presented on April 11, 1951, with a paralysis of the left facial muscles, together with an inability to close the left eye. A history of the present illness revealed a neuralgic pain in the left facial tissues of two weeks' duration. The pain disappeared temporarily and then recurred. On April 7th a slight twitching of the muscles was noticed which persisted for a few hours. On April 8, the pain reappeared over the parotid and post-auricular area, together with a paralysis of the facial lagophthalmos muscles and lagophthalmos of the left eye. A congenital squint was present.

Oral examination revealed that two right maxillary teeth and two mandibular teeth had been extracted prior to present illness, but no other abnormalities were noted. No gingivitis or caries was noted. The diagnosis was paralysis of the 7th cranial nerve of a peripheral nature, both upper and lower divisions involved—"Bell's palsy".

An appliance was prepared (Figs. 1 and 2) and the patient referred to an internist for systemic evaluation and treatment. During hospitalization all physical findings were found to be essentially negative as was the

Kahn. Laboratory findings were all within normal limits.

Medication consisted of intra-muscular injections of vitamin B complex, 1 ml. daily until April 25; and after discharge to the Out Patient Service, vitamin B complex fl. oz. ii t.i.d. were prescribed. Diet as desired, with forced fluids at least 2,000 ml. daily.

The appliance was inserted on April 14, with instructions to remove it during treatment, and a shield was applied over the left eye for protection of the cornea. A short course of radiation therapy—100 "R" units—was given daily from April 13 to April 18. Improvement was noted and radiation therapy was discontinued.



Fig. 3.—Appliance as worn by patient.

The patient received 10 treatments (Faradism with short wave and massage) and then discharged to Out Patients on April 25. Here she received 29 more treatments which ceased on July 23 after normal muscle function had been restored.

Improvement was slow but noticeable (Fig. 3). By April 30, pain had disappeared and slight movement of the left cheek muscles was noted. By July 23 paralysis had disappeared with facial muscle function returned to normal. The appliance was removed and the patient discharged.

#### SUMMARY

A simple intra-oral prosthetic appliance for the relief of symptoms in facial paresis has been described. Its advantages are: (1) simplicity of construction; (2) pleasant appearance; (3) cleanliness; and (4) lack of discomfort.

Those who are quite satisfied sit still and do nothing; those who are not quite satisfied are the sole benefactors of the world.—Landor.

# BRONCHIAL LAVAGE IN THE SEARCH FOR TUBERCLE BACILLI\*

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THE DEFINITIVE DIAGNOSIS of pulmonary tuberculosis rests on the demonstration of tubercle bacilli in the broncho-alveolar exudate. History, physical signs and x-ray findings may be misleading in any individual case. Examination of the sputum or gastric washings in such cases may readily yield a diagnosis; but if these examinations are negative the diagnosis may be in doubt and specific therapy may be delayed or detrimental pending the slow outcome of observation and other tests. This is particularly true in the case, for instance, of a bronchogenic carcinoma discovered on a routine chest x-ray examination. While the patient is being studied with a view to eliminating or confirming a presumptive diagnosis of tuberculosis he may slip from an operable to an inoperable case of bronchogenic carcinoma.

Only slightly less important is the demonstration of tubercle bacilli in the prognosis of any individual case of pulmonary tuberculosis. To illustrate this point by a supposition: if patients were to be discharged from sanatoria on the change from positive to negative sputum on smear only the prognosis would be poor and the re-admission rate very high, for we know that many carriers of tubercle bacilli would be missed. In other words there would be many sputum-positive cases among the group labelled as sputum-negative. If sputum concentrates are done the false-negatives dwindle. If cultures are done the false-negatives dwindle further. If gastric lavages are done and cultures made of the gastric washings we begin to arrive at a point where a few tubercle bacilli appear now and then in patients who otherwise seem to have arrested disease. It is this group, however, which furnishes a high percentage of the re-admissions to sanatoria after discharge in an apparently good condition with a negative sputum. In several studies the reactivation rate was twice as high for the occasional positive as for the true negative. In one study the compared rates for 199 cases were 10.5% re-admissions for the true negative for 6 months and 28.5% for the occasional positive cultures.

In diagnosis then and in prognosis as well it becomes highly important to establish the true negative and to weed out the false negative. The search for tubercle bacilli, in other words, becomes more and more intense.

The methods of search are broadly two-fold. The first is to secure a specimen which is likely

to contain the tubercle bacilli. The second is to treat the specimen in order that the few bacilli found will come to light. The latter does not concern us at the moment except for one point, and that is that one of the disadvantages of tuberculosis cultures is the long interval of time—some 6 to 8 weeks—which must elapse between securing the specimen and securing the result. During this time much may happen to a patient whether he has tuberculosis or not. Efforts are being made with various media and methods to cut this 6 or 8 week time interval down to as many days. One of these methods, known as a slide culture method, is at present being tested at the Grace Dart Hospital and we may be able to report on it at a subsequent date.

The subject of this presentation concerns itself with the securing of a specimen which is likely to contain tubercle bacilli.

The sputum which the patient brings up is the first to be examined. Often this specimen is not suitable because it consists of nasal exudate and saliva rather than a true specimen from the bronchi and alveoli. Often the patient denies having any sputum at all. In the latter case he may be swallowing it, either consciously or unconsciously. In either case there will be considerable swallowing of sputum during the night when the self-cleansing mechanism of the lung brings material to the throat and it is unconsciously swallowed. This specimen may be retrieved by a gastric lavage. If several gastric lavages are taken on successive mornings the chances of retrieving tubercle bacilli are greater, and in some institutions it is now standard practice to do three consecutive gastric lavages. This method has been taken as the ultimate standard for finding tubercle bacilli, but it is fraught with several obvious dangers and disadvantages.

The first is that the specimen may get lost further down the intestinal tract. The reasons for this are obvious.

The examination must be done before breakfast. The patient may be forgetful or may purposely take a glass of water and wash the morning stomach contents down the duodenum, giving rise to a negative result when it should have been positive. Or he sits fasting in bed, breathing in the appetizing odours of breakfasts all around him, his mouth watering and his stomach responding with appropriate contractions and hypermotility sending the hoped for specimen down the intestinal tract. This is especially true with patients who must come long distances to clinics and doctors' offices to have this test done. Sometimes an amazing amount of tuberculosis may be present in the lungs, and yet the examination gives a negative result in the clinic. On admission to a sanatorium, however, a positive gastric is readily obtained. The answer lies in gastric hypermotility which disposes of the specimens before they can

\*Presented at a Meeting of the Section on Chest Diseases, Montreal Medico-Chirurgical Society, March 28, 1952.  
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be obtained. Of less importance but still to be considered is the action of the acid in the stomach on tubercle bacilli, and undoubtedly some strains become destroyed by the hydrochloric acid in the gastric juice. Finally, there are the occasional findings of acid fast bacilli in the gastric juice which are true red herrings on the trail of diagnosis, because they are not tubercle bacilli at all but some other things of non-pathogenic nature which parade under a variety of names.

With these objections in mind then it is obvious that to lean on gastric lavage as the ultimate in diagnosis is to lean on a slender reed indeed. It is also obvious that the best specimen would be one secured from the pathological lesion itself, be it in the alveoli or in the bronchial tubes where the alveolar exudate has been thrown off.

There are several methods of securing a bronchial specimen. One is to swab the larynx and upper trachea and make smears of the swabs. This requires a rather delicate touch when done in the unanæsthetized throat. Another is to fit cover slips over laryngeal mirrors then proceed as for an indirect laryngeal examination, excepting that the patient is made to cough. The droplets deposited on the cover slip are then examined after appropriate staining for tubercle bacilli. This method has never been popular due to the difficulty of culturing the specimen obtained. There is of course the cumbersome method of bronchoscopy with aspiration of bronchial secretions. This is probably the most exact method, but too difficult to apply for repeated examinations, especially as a clinic or office procedure.

The method we have employed and one which seems to hold considerable promise is known as tracheo-bronchial or broncho-alveolar lavage. The term bronchial lavage seems preferable to the other two.

The technique is simple and it may be applied in hospital, clinic or office. Moreover, it may be applied to the non-fasting patient so that examination may be done in the afternoon or evening as well as early in the morning; a matter which may be of some importance in a busy office or clinic.

The procedure resembles very much the one used for the supraglottic drip method of lipiodol instillation. The throat must first be anæsthetized. A variety of local anæsthetic agents may be used, but we prefer 10% cocaine. After preliminary anæsthesia by spraying, the throat is anæsthetized by light touch with swabs soaked in the anæsthetic solution. The tongue is grasped and pulled forward during this procedure, and a small amount of anæsthetic is allowed to dribble into the trachea. The whole procedure takes anywhere from 5 to 20 minutes depending on the individual sensitivity of the patient's throat.

After anæsthesia has been satisfactorily established some 20 c.c. of saline or distilled water are instilled rapidly into the tracheal-bronchial tube using a catheter or cannula. This may set up an immediate cough reflex, and the specimen is caught in a suitable container such as a Petri dish. If the instillation is a little slow or the anæsthesia in the bronchi somewhat deeper, the cough reflex may be delayed for several minutes, or it may be necessary to encourage the patient to cough in order to retrieve a suitable specimen. Slow instillation or deeper anæsthesia are especially desirable where one wishes to wash out certain segments of the bronchial tube. One must allow time to posture the patient appropriately so that the saline may reach the desired part of the lung before the patient coughs.

To be of general value any test must be easy enough to perform so that even non-experts can perform it adequately. We have therefore left the actual procedure to a succession of interns and residents in the past two years, merely furnishing them with the instruction and one or two demonstrations. Thanks are due to these and also to the laboratory technicians who have examined all specimens obtained.

In approximately two years, from January 1950 to November 1951, 105 patients were subjected to bronchial lavage. Only patients who had negative sputa by smear, concentrate and culture were tested by bronchial lavage. In most cases the gastric lavage also had been previously negative on at least one occasion.

TABLE I.

	No. of tests	Positive smear	%	Positive culture	%
Gastric lavage . . .	257	8	3.1	12	4.8
Bronchial lavage . . .	252	9	3.5	38	15%
	105 pts.			28 pts.	

As far as possible gastric and bronchial lavages were then performed on these patients at about the same time, *i.e.*, within a few days of each other. A total of 257 gastric and 252 bronchial lavages were done on these patients. The results are shown in Table I, which indicate very little difference on smear but a decided superiority on culture for the bronchial lavage. Bronchial lavage in our hands is about 3 times more sensitive than gastric lavage as a method of finding tubercle bacilli.

It should be mentioned that two of the gastrics and three of the bronchial lavages were positive on smear and were negative on culture. We feel that this was due to streptomycin and P.A.S. therapy, and that the bacilli found were either dead or too attenuated to grow on culture.

(Concluded on page 657)

# The Canadian Medical Association Journal

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(Information regarding contributions and advertising will be found on the second page following the reading material.)

## Editorials

### RE: C.M.A. MEETING

We hope you are coming to Vancouver next June. The last Canadian Medical Association meeting in Vancouver was in 1931. There has been one meeting in British Columbia since then, held in Victoria in 1936. The next meeting due in this Province was our 1946 Victory meeting which was held, as you will all remember, at Banff. The Canadian Medical Association will find great changes in Vancouver in twenty-three years. Our population and industrial activity has increased by leaps and bounds. The medical men in practice have doubled in that period. With all these changes we hope you will find that there has been a proportionate increase in western hospitality. On behalf of the B.C. Division of the Canadian Medical Association I would bid you all a most hearty welcome to our annual meeting next June.

These annual meetings are always worth attending but we are fortunate in having some additional features for this meeting which we feel sure will make it an outstanding event. The clinical program has been drafted by a local committee under the able leadership of Professor Rocke Robertson, Head of the Department of Surgery in our new Medical School. I am confident that the work of this committee will be of great assistance to the Central Program Committee. In addition, for the first time in B.C., we are going to be able to provide you with a program of coloured television clinics. These clinics are provided through the kindness of Messrs. Smith, Kline & French of Philadelphia. A committee under the chairmanship of Professor John McCreary has in hand the development of a full program of five sessions, morning and after-

noon on Monday and Tuesday, and Wednesday morning.

It is a peculiarly appropriate time for the Canadian Medical Association to meet in Vancouver since it co-incides with the date of graduation of the first class in our Medical School. We feel that a very excellent teaching staff has been established that will produce a Medical School of which both British Columbia and Canada may well be proud.

In addition to the program committee other local committees are already at work on important features of our national medical meeting such as housing and entertainment, of which you will hear more. You can rest assured that we will do our best to look after you, your wife and family.

### TRAFFIC FATALITIES

There cannot be too frequent reference to the problem of traffic fatalities and injuries and yet in spite of the attention which it receives there are only a few areas which can show any marked success in dealing with it. As a health problem, quite apart from the treatment of the injured it has definite aspects of a preventive nature. These were put before us in a paper by Dr. H. Elliott in May last (this Journal Volume 68, No. 5) and we are glad to see that it was made the subject at the recent fall Clinical Week of the Montréal Medico-Chirurgical Society. There was every reason why it should be brought up again, as the traffic fatalities in the Montreal district have attained that dubious distinction of a new high so indifferently applied to both good and evil events.

The profession can help and would be only too willing to do so, in establishing properly high physical and mental standards for those who drive. The application of physical tests for drivers of motorcars show variations from Province to Province which are disquieting. Mental tests while not being quite so easily applied would still screen out the most obvious mental defectives. But we would always be left with the impatient, the deficient-in-judgment—we may even add the discourteous—who contribute to the "new high".

The menace of alcohol in relation to road accidents is clearly enough recognized, but still exists. Much is being done here to improve the

situation, and there are well known instances in which determined efforts are having reasonable success. There should be many more such successes.

Perhaps it will only be when the cost of motor insurance becomes prohibitive on account of accidents—and to some people in some areas that may seem to be already the case—that more resolute attempts to deal with traffic fatalities as a public health problem will be made. In the meanwhile our profession can do much by insisting both publicly and in private amongst patients, on the urgent necessity for the precautions which should surround the use of such a potentially dangerous machine.

#### ON PRESCRIPTIONS

A further modification—and a welcome one—of the Food and Drug prescription regulations is announced by the Department of National Health and Welfare. This is to the effect that a prescription for drugs named or included in Appendix IV or Appendix V of the Food and Drug regulations may be either in writing or oral. In the latter case the druggist must reduce it to writing "forthwith" and record it properly, showing the date and number, the name and address of the patient and whoever issues the prescription, as well, of course, as the directions for use. Amongst these last it must always be stated whether the prescription is to be refilled or not and if so, how often. Prescriptions for certain drugs cannot be refilled without direction from the practitioner: these drugs are shown in Appendix IV and V of the Food and Drug Regulations, and are as follows:

#### APPENDIX IV

Amphetamine and any salt thereof.  
Barbituric acid and any salt, homologue, or derivative thereof.  
Bromal and the following derivatives: bromal hydrate, brometone, bromoform.  
Carbromal and the following derivatives: acetylcarbromal, bromisoval, diethylbromacetamide, allylisopropylacetylurea.  
Chloral and the following derivatives: alpha-chloralose, chloralformamide, chloral hydrate, butyl chloral hydrate, chloralimide.  
Disulfiram.  
Methamphetamine and any salt thereof.  
Paraldehyde and metaldehyde.  
Sulphonal and alkyl sulphonals.

#### APPEDIX V

Aminopyrine and any salt, homologue or derivative thereof.

Antibiotics, the following:

Chlortetracycline and any salt or derivative thereof.  
Carbomycin and any compound thereof.  
Chloramphenicol.  
Dihydrostreptomycin and any compound thereof.  
Erythromycin and any compound thereof.  
Oxytetracycline and any compound thereof.  
Penicillin, its salts or derivatives or preparations thereof excluding lozenges that contain not more than 3,000 International Units per dose.  
Polymyxin B sulphate except for topical use or for local action in the oral cavity or nasal passages.  
Streptomycin and any compound thereof.  
Cinchophen and neocinchophen.  
Corticotrophin (ACTH).  
Cortisone and its salts.  
2,4-dinitrophenal and any compound, homologue or derivative thereof.  
Ergot alkaloids.  
Hydantoin derivatives.  
Hydrocortisone and its salts.  
Iproniazid.  
Isoniazid.  
Selenium and any compound thereof.  
Sex hormones (except skin creams containing sex hormones, which are demonstrated to be free from systemic effects).  
Sulfonamides and any salts, homologue, or derivative thereof.  
Thiocyanates.  
Thiouracil and any homologue, or derivative thereof.  
Thyroid.  
Thyroxin and any salt thereof.  
Trimethadione and paramethadione.  
Urethane.

#### THE ALLAN MEMORIAL INSTITUTE

With the opening of a new Wing to the Allan Memorial Institute of Psychiatry in Montreal, a significant chapter is added to the history of the treatment of mental ill health in Canada. It is true that this Institute originated as a local undertaking, but in its short term of existence it has developed methods and ideas unique in kind and fast becoming national in scope.

For this reason we give elsewhere in this issue a short comment on the opening ceremonies (see page 661) and will only remark here on the intense vigour which characterizes the work of the Institute. This is due to the quality of the carefully chosen staff, but as in all institutions, especially in their early formative years, the driving force and the creative efforts are mainly those of one man, who in this case is the Director, Dr. Ewen Cameron.

Not many institutions can show in so short a time such clearly defined results. That the Allan Institute has so far operated on a physically small scale adds to its achievement. With its increased capacity we may look forward to a continued expansion of the indispensable part it is taking in mental health care, not only in its own Province but, by virtue of those whom it trains, throughout the whole country.

*Editorial Comments*

DR. CHARLES FERDINAND MARTIN

In the death of Dr. C. F. Martin Canadian Medicine loses one of its outstanding figures. From his earliest years in his profession his abilities were apparent, first, as was natural, in his clinical work and teaching, and then as time went on in administrative capacities.

Our Association owes him much. He was one of the small group who revived our organization in the early 'twenties when the immediate outlook was so discouraging, and his guidance and interest in the succeeding years were of inestimable value.

His energy and brilliance of mind alone would not have given him the high place which he has earned in our memory. He was peculiarly gifted with tact and sympathetic understanding and his many and diversified interests in private and public life are in themselves evidence not only of his high ideals, but of his unusual and attractive personality and of his desire to serve others.

## SOME ASPECTS OF ENZYME RESEARCH

Knowledge of enzyme activity is now an integral part of the study of a number of medical and paramedical subjects. It is essential to the understanding of biochemistry, pharmacology, chemotherapy and toxicology, in which subjects a good deal of the progress made in recent years has been linked up with the study of enzyme systems. *The British Medical Bulletin* has therefore rendered a valuable service in devoting a recent number (Vol. 9, No. 2, 1953) to a symposium on *Some Aspects of Enzyme Research*, in which a number of distinguished enzymologists describe the historical development of subjects with which they have been personally concerned in the research laboratory.

It cannot be claimed that the symposium makes for easy reading, since the reactions of enzymes of biochemical interest have been shown to be extremely complicated; nevertheless, contributors to the symposium have in general succeeded in achieving lucidity without sacrifice of accuracy. A vast amount of material scattered through the literature is presented in critical reviews written by a team led by Sir Rudolph Peters of the University of Oxford and including two Canadian biochemists, Hanes of Toronto and Quastel of Montreal.

The enzyme systems discussed include folic acid, cytochrome, B-glucuronidase (of interest in cancer research), the cholinesterases, plasma alkaline phosphatase (of diagnostic value in cases of bone disease and jaundice), and a host of others less well known to clinicians but of great interest to biochemists and pharmacologists.

S.S.B.G.

## GENERAL PRACTITIONER

THE COLLEGE OF GENERAL  
PRACTICE OF CANADA

GLENN SAWYER, M.D.,\* Toronto

THE MOVEMENT for self-improvement amongst the general practitioners of Canada which began to gather momentum some five years ago is now about to be brought into definite shape before the profession in the form of a College of General Practice of Canada. This College will be a rallying point for all those engaged in the general practice of medicine who feel that through their own effort the standard of general practice can be raised and recognized.

During this five-year period groups of earnest general practitioners have been meeting, sometimes in formal sessions, but more often in the halls and bedrooms of hotels across Canada, studying and clarifying the remedy for the loss of public and professional prestige which has paralleled the rise of specialization in Canadian medicine.

At the meeting of the Canadian Medical Association in Banff a group of six men was appointed to inquire into all aspects of this movement and to make recommendations to the next Council meeting of the C.M.A. This committee took its work seriously and reported to the Winnipeg meeting this year that a College of General Practitioners should be established, independent of the C.M.A. and the Royal College of Physicians and Surgeons of Canada. To accomplish this an organizing committee of seven was nominated by the Section on General Practice of the C.M.A. and approved by the Executive Committee with power to do all things necessary to establish the College.

The organizing committee met in Toronto on October 16 and 17 and attempted to put down on paper some rules and regulations that would govern the College until such time as a formal constitution could be approved by a meeting of the members of the College.

A question frequently asked by both general practitioners and specialists alike is, "What are the aims and objects of this College?" The answer to this is contained in the listed aims and objects as presented to the C.M.A. Council:

1. To establish an academic body with broad educational aims.
2. To arrange for undergraduate teaching by and for General Practitioners.
3. To arrange for the presentation of post-graduate education for general practitioners.
4. To arrange for research in general practice.
5. To arrange for publication of original articles by general practitioners.

\*Secretary, Organizing Committee, College of General Practice of Canada.

6. To arrange for hospital staff appointments for general practitioners.

7. To provide suitable recognition to members in the field of general practice.

8. To do all things necessary to maintain a high standard in general practice.

These aims and objects would indicate that the prime function of the College is to be educational. The medical-economic and political aspects of medical practice will remain with the medical associations. As membership in the Canadian Medical Association or L'Association des Médecins de Langue Française du Canada is one of the conditions of membership in the College, it should not be difficult to delineate the functions of each.

One of the objects of the College is to provide a stimulus to general practitioners to continue a postgraduate educational program throughout their years of practice. This stimulus will be membership and/or fellowship in the College—standards of excellence that will come to take their place with certification and fellowship in the specialty colleges.

At the present time many young graduates feel that they should have a certificate of some kind even if they are desirous of entering general practice. They spend a few years in acquiring the required specialized knowledge only to find themselves poorly equipped to meet the multiplicity of problems presenting themselves in a general practice. It will be the object of the College to establish educational facilities that will meet the needs of the general practitioners. This may require some changes in the undergraduate teaching program and will definitely necessitate the establishment of two and three-year internships in the hospitals of Canada of such design that they will give the interns a well-rounded basic knowledge of modern medicine in all departments of practice.

It has been the feeling of many practitioners that the "once and forever" granting of a certificate or fellowship does not meet the needs of the general practitioner. Retention of membership or fellowship in the College will require the general practitioner to take a prescribed number of hours of postgraduate study each two years. Part of this will be attendance at formal clinical sessions and part will be participation in local medical activities such as hospital rounds, branch medical meetings, writing and reviewing papers and reading courses.

One of the deterrents to the establishment of a College of General Practice has been finances. It is realized that only a small percentage of the general practitioners will come forward with early support of the College. Many will adopt a wait-and-see attitude. With this thought in mind a Foundation Fund is to be established early in 1954 with the hope that many interested parties and individuals will rally to the support of this forward step in medical education.

The next issue of the Journal should contain details of membership classification and requirements; the concept of a continuing educational program; the names of the Executive Committee, the Board of Representatives and the Executive Director; the date of acceptance of membership applications and the official launching of the College.

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## LE COLLEGE CANADIEN DES MEDECINS EN PRATIQUE GENERALE

GLENN SAWYER, M.D.,\* *Toronto*

LE MOUVEMENT en faveur du perfectionnement des médecins en pratique générale au Canada, qui commença il y a environ cinq ans à faire boule de neige, est sur le point de prendre une forme définitive au sein de la profession par l'établissement d'un Collège Canadien des Médecins en Pratique Générale. Ce Collège constituera un point de ralliement pour tous ceux qui se consacrent à la médecine générale et qui estiment que, par leurs propres efforts, le niveau de la pratique générale peut être élevé et reconnu.

Au cours de ces cinq années, des groupes de médecins en pratique générale, sérieux et convaincus, se sont réunis—parfois dans des assemblées officielles mais plus souvent dans des couloirs ou chambres d'hôtels à travers le Canada—afin d'étudier et d'éclaircir les moyens de remédier au déclin de leur prestige, à la fois auprès du public et de la profession, qui a accompagné l'essor de la spécialisation dans le domaine de la médecine au Canada.

Lors de la convention de l'Association Médicale Canadienne (C.M.A.) à Banff, un groupe de six hommes fut nommé dans le but d'examiner tous les aspects de ce mouvement et de formuler des recommandations à la prochaine réunion du Conseil de la C.M.A. Ce Comité se mit à la tâche avec ardeur et, à la réunion de cette année à Winnipeg, se prononça en faveur de l'établissement d'un Collège de Médecins en Pratique Générale qui devrait fonctionner indépendamment de la C.M.A. et du Collège Royal des Médecins et Chirurgiens du Canada. Afin de réaliser ce projet un Comité d'organisation composé de sept membres fut désigné par la Section de la C.M.A. et reçut l'approbation du Comité Exécutif. On lui attribua tous les pouvoirs nécessaires en vue de l'établissement du Collège.

Les 16 et 17 octobre, le Comité d'organisation se réunissait à Toronto et rédigeait un projet de

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\*Secrétaire du Comité d'Organisation, Collège Canadien des Médecins en Pratique Générale.

statuts et règlements destinés à diriger le Collège jusqu'à ce qu'une constitution officielle puisse être approuvée à une réunion des membres du Collège. Afin de répondre à une question fréquente de la part des médecins en pratique générale et des spécialistes, à savoir: "Quels seront les buts et objectifs de ce Collège?", le Comité d'organisation a préparé la liste que voici, qu'il a soumise au Conseil de la C.M.A.:

#### BUTS ET OBJECTIFS:

1. Etablir un corps académique visant un vaste champ éducatif;
2. Organiser un programme d'enseignement à l'échelle universitaire par/et pour les médecins en pratique générale;
3. Organiser des cours post-universitaires pour les médecins en pratique générale;
4. Organiser des travaux de recherche en pratique générale;
5. Prévoir la publication d'articles inédits par des médecins en pratique générale;
6. Prendre des mesures pour promouvoir l'engagement dans les hôpitaux de médecins en pratique générale;
7. Assurer aux membres du Collège une considération équitable dans le domaine de la médecine générale;
8. Faire tous les efforts nécessaires pour maintenir un degré d'excellence en pratique générale.

Ces buts et objectifs soulignent la fonction primordiale du Collège qui vise d'abord le perfectionnement de ses membres. Les aspects médical, économique et politique de la pratique médicale continueront de relever des associations médicales. Vu que tout membre du Collège est tenu de faire partie de la C.M.A. ou de l'Association des Médecins de Langue Française du Canada, il devrait être relativement facile de délimiter les fonctions propres à chacune de ces organisations.

L'un des buts du Collège est de fournir aux médecins en pratique générale un stimulus pour poursuivre un programme de perfectionnement durant toute leur carrière. Ce stimulus, ce sera la qualité de membre et/ou de fellow du Collège —titres d'excellence qui auront bientôt la même distinction que les titres correspondants des Collèges de Spécialistes.

Par les temps qui courent, nombre de jeunes diplômés estiment qu'il leur faut un certificat quelconque même s'ils choisissent d'embrasser une carrière en médecine générale. Ils consacrent quelques années à approfondir une spécialité quelconque pour se voir ensuite en piètre posture pour envisager les multiples problèmes qui confrontent le médecin en pratique générale. L'une des fonctions du Collège sera de mettre à la disposition des médecins en pratique générale des programmes d'études destinés à répondre à leurs besoins. Il sera probablement nécessaire de modifier le programme d'enseignement universitaire mais une chose certaine c'est qu'il faudra absolument prévoir des stages de deux à trois années dans les hôpitaux canadiens dans le but d'assurer aux internes une connaissance

fondamentale solide de la médecine moderne dans toutes les branches de la pratique.

Un grand nombre de médecins ont exprimé l'avis que le fait d'obtenir à un moment donné un certificat ou un titre de fellow ne suffit pas pour assurer le succès d'un médecin en pratique générale. D'ailleurs, pour conserver son titre de membre ou de fellow du Collège, le médecin en pratique générale devra s'engager à consacrer chaque deux ans un nombre prescrit d'heures à des études post-universitaires. Ce programme comportera des séances officielles de clinique, des tournées d'hôpitaux, des réunions médicales régionales, auxquelles le médecin sera tenu de participer. Il devra également rédiger des travaux et faire la critique d'articles, et prendre part à des groupes d'études.

La question financière a été jusqu'à maintenant l'une des pierres d'achoppement auxquelles s'est heurté l'établissement d'un Collège de Médecins en Pratique Générale. On se rend compte que seul un faible pourcentage de médecins sera prêt à avancer de ses deniers pour aider le Collège à ses débuts. Plusieurs adopteront une attitude expectante. C'est pour cette raison qu'il a été décidé d'établir, dès les débuts de 1954, un Fonds d'Etablissement avec l'espoir que plusieurs intéressés et des sympathisants à la cause voudront appuyer ce pas en avant dans le domaine de la science médicale.

Le prochain numéro du Journal contiendra les détails relatifs aux conditions d'adhésion et à la classification des membres; le concept d'un programme éducatif continu; la liste des membres du Comité Exécutif, du Bureau des Représentants, de même que le nom du Directeur; les dates fixées pour l'inscription des aspirants et pour le lancement officiel du Collège.

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#### AGING, VASCULAR DISEASE AND CEREBRAL CIRCULATION IN MAN

The current interest in the aging process has brought into clear focus the necessity for differentiating the process of natural senescence from that of the chronic diseases so often seen in aging individuals such as hypertension, diabetes, arteriosclerosis, and others. Whether the process of senescence itself can be slowed or otherwise altered is one matter, but the prevention, pathogenesis and treatment of vascular disease, for example, is quite another and perhaps, in the present state of our knowledge, more amenable to preventive and therapeutic measures.

The evidence presented by H. A. Shenkin, *et al.* (*J. Clin. Invest.*, 32: 459, 1953) that aging *per se* does not necessarily reduce the cerebral blood flow or oxygen consumption points again to the need for intensive study of arteriosclerosis and hypertension, and their prevention. It is hardly necessary to state that these two diseases are intimately related to nutrition with respect to their etiology and treatment. *Nutrition Reviews*, 11: 352, 1953.

## MEDICO-LEGAL

### MEDICO-LEGAL ASPECTS OF ANÆSTHESIA

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THE PURPOSE of this presentation is to attempt to demonstrate three things. First, what the responsibilities of anæsthetists are as far as the courts are concerned. Second, what kinds of difficulties anæsthetists can get into which result in law suits. Third, how to minimize the chances of having such law suits occur.

To begin with, I would like to make some general remarks about suits for negligence or malpractice. The first thing to realize is that any of us who practise medicine in any of its branches may be sued. No one can stop a patient from bringing an action against you, if he wants to, whether there are any grounds for the action or not. Many of the cases which come before the Canadian Medical Protective Association are of this nuisance type. Nevertheless, there are many instances where the plaintiff has a just grievance because of the doctor's carelessness or lack of attention to detail in the handling of the case. The following passages are quoted from a paper by Mr. Edson L. Haines, Q.C. in the *Canadian Bar Review* of May, 1952. He puts the points I want to make better than I could give them to you.

"The essential obligations the law imposes upon the physician or surgeon in general practice who takes charge of a case are simply stated. They are: (1) He must possess and use that reasonable degree of learning and skill ordinarily possessed by physicians and surgeons in the locality where he practises. The key words in this statement are "reasonable" and "ordinarily". The degree of learning and knowledge is the degree that might reasonably be expected from the average doctor in the district. Few men have rare and extra endowments, but a doctor is not judged by the standards of the paragon. He need only display the skill and learning of the average physician. Furthermore, a country practitioner, for example, may not have the same opportunities to confer with fellow practitioners as the practitioner in larger centres and one must take into consideration, therefore, the locality where the doctor practises.

(2) The doctor must use his best judgment. Judgment is the faculty of deciding wisely. The law will not be satisfied with anything less than the use of "his best judgment" in exercising his skill and applying his knowledge. He must make the best and wisest decision within his power. It does not of course require him to have or use the best judgment some other man might use. It is not the best possible judgment, but his best judgment he must bring to bear.

(3) He must keep abreast of the times and follow the approved methods in general use. He must know what is going on in medicine, what new discoveries have been made, what old opinions or conclusions have been discarded. He should take advantage of medical and scientific journals and if possible attend conferences where he may exchange information with other phy-

sicians. Doctors are singularly fortunate in the wealth of scientific literature which is available to them and they fail to take advantage of it at their peril.

I have already pointed out that the standard of care of the average general practitioner is referable to the locality in which he practises. Conceivably, it might vary in different districts. There is no such local standard for the specialist. He holds himself out as possessing special skills and knowledge, and it is his duty to have and apply the degree of skill possessed by the average specialist in his field. The same degree is expected of him when he is practising in a large city or a small centre."

Now to quote other excerpts from the same paper:

"In order to succeed in an action for malpractice, the plaintiff must establish, or he fails, (1) that the relationship of physician and patient existed; (2) the doctor departed from some duty he owed his patient and (3) the departure from duty was the competent producing cause of the injury. No doctor can be found liable unless he has taken charge of the case. . . ."

"A doctor does not guarantee a cure or a good result. And a bad result does not in itself establish negligence. He is not liable for a mere error of judgment, provided he does what he thinks is best after careful examination. Where there is a choice of approved methods, one method may be preferable to another. The doctor must decide which he will follow. If he errs in his choice, he is not liable provided, as I say, he has done what he thinks best after careful examination. But a doctor may not adopt a procedure that has been universally condemned or one that has not yet received the approval of scientific men, and then assert that doing what he did involved a mere "error of judgment".

Generally speaking the allegations that succeed against a doctor in a malpractice suit are (a) his failure to use reasonable care and diligence; or (b) that he departed from approved methods in general use. Rarely is it established that he did not possess the requisite skill. . . ."

#### LEGAL ASPECTS OF ANÆSTHESIA

So much, then, about generalities in these cases. It is only since 1942 that anæsthesia has come of age from a legal point of view. Prior to 1942, when a precedent was set in Ontario, the surgeon was considered to have full charge of the operating room, which included the anæsthesia. The legal master-servant relationship existed between the surgeon and the anæsthetist. Should a patient be harmed or die from the anæsthetic, the surgeon was held responsible though the anæsthetist would be joined in the action. However, in the case which set a precedent, the anæsthetist was sued for an alleged ill result following an intravenous pentothal anæsthetic. The surgeon was not brought into the action at all, but appeared as a witness. This to our knowledge was the first time in Canada that the anæsthetist was considered to have the full responsibility of the anæsthesia on his own shoulders.

If this precedent is followed in the courts of other provinces, which it may well be, then the anæsthetist alone may be held responsible for trouble arising during an anæsthetic and due to the anæsthetic and not the surgical intervention.

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This is as it should be, with anaesthetists having to take their fair responsibility. It is all the more imperative, therefore, that the anaesthetist be fully cognizant of the patient's history and physical state prior to administering the anaesthetic. He should himself have checked the patient's condition and have his own notes recorded prior to operation. These notes are his safeguard and are required by the Ontario Hospital Act in Ontario.

I felt that the doctors might be interested in the type of accidents and difficulties that anaesthetists have had in the past which resulted in law suits or threat of legal action. The material from which this information was drawn was taken from the files of the Canadian Medical Protective Association. This Association is a mutual aid society made up of Canadian doctors for mutual assistance in case of suits claiming malpractice or negligence against any of its members. Over half the practising doctors of Canada are members so it can be seen that the experience this Association has had in this field is very extensive.

Perhaps the most surprising and certainly one of the most unfortunate types of accident is the one in which the wrong patient is operated on or the wrong part of the right patient is operated on. It may be a good place here to point out that it is as much the anaesthetist's responsibility as it is that of the surgeon to be sure that the correct patient is in fact being operated upon. So remember to verify this very important point every time you are faced with an anaesthetic to give. I suppose that this seems so elementary that you would hardly believe that just such mistakes are occurring in Canada, and elsewhere, of course, every year. These mistakes do not happen only in little rural hospitals. There have been instances in very well known teaching hospitals in the largest centres.

Let me give you two instances: The first happened in a teaching hospital in Canada. In this case a patient booked for an arthrodesis of one knee was in some way confused with another patient scheduled for operation that morning who was to have a subastragaloid arthrodesis carried out. The subastragaloid arthrodesis was done on the wrong patient. Here, you might say that the surgeon was at fault. It is of course true that he was, but if the anaesthetist had been taking proper care, he should have been able to avert this catastrophe.

The second case of this type is one in which two children of about the same age (two years) were to be operated upon the same morning by different surgeons. One was to have had a tonsillectomy and the other a circumcision. The children were similar in appearance and in adjoining hospital rooms. The ward maid brought the wrong child to the operating room and a tonsillectomy was done on the child who was intended to have a circumcision. As a result, suit

followed, and as there was no excuse for such an error, damages were obtained, in this case against the surgeon. It would have been quite possible that the suit could have joined the anaesthetist and he also could have been found negligent.

Remember then to check the identity of your patients every time and see that the surgeon does the same.

#### INHALATION ANÆSTHESIA

Accidents have happened with every type of anaesthesia. Here are a few which occurred where an inhalation anaesthetic was being given:

1. *Explosions.*—As you are well aware, certain inhalation anaesthetics when mixed with oxygen or air form explosive mixtures. The building up of static charges within the anaesthetic machine with resulting potential differences creates the possibility of sparking and an explosion. See how easily it can happen if circumstances are right.

This anaesthetist was giving a cyclopropane inhalation anaesthetic to a female patient when he noted evidence of carbon dioxide excess. The circulating nurse was busy so he crossed the room to get another canister of soda lime. As he came back to the patient, he saw that her jaw had dropped and was impeding her airway. The anaesthetist at once grasped her jaw to rectify the situation and immediately a loud explosion occurred which set fire to some of the drapes and caused a second degree burn of the patient's shoulder. For this she had to be hospitalized for an extra month. A claim was made against the anaesthetist and the hospital. In this particular instance the anaesthetic machine was not grounded. The courts in such a case are inclined to see only these facts: (1) The patient entered hospital with no evidence of a burn of her shoulder. (2) Because of what happened in the hospital she now has a burn of her shoulder. This is a case where "*Res ipsa loquitur*" (the thing speaks for itself). In such cases the damages are nearly always awarded for the plaintiff. The moral here is, of course, that you should all learn as much as you can about the cause and prevention of anaesthetic explosions. It is not for me to try to tell you how this danger may be avoided, you know much more about all this than I do, but I can tell you that if you have an explosion and the patient is injured, you may very likely be faced with a law suit. What is more, you will likely lose that suit.

2. *Occlusion of the patient's airway.*—In these days of intratracheal tubes and intratracheal anaesthesia for operations on the nose and throat, the lodging of a sponge or piece of dental packing in the larynx is fortunately less common than it was. However, this accident still occurs, especially where intratracheal anaesthesia is not being used. The following is an example: In this case a physician, trying to do his patient a good turn, agreed to extract his remaining teeth. In

the old days of practice, especially in the rural areas, the extraction of teeth was a recognized procedure carried out by the doctor when no dentist was available, and in some areas it still goes on. The doctor gave the patient the anaesthetic himself, open ethyl chloride and ether was used. The doctor, having put the patient under, proceeded with the extraction. When the operation was completed the doctor noted that the patient had become cyanosed and ceased to breathe. He called a nearby otolaryngologist for help, but their efforts were of no avail and the patient died. At autopsy, a roll of cellulose packing was found lodged in the patient's larynx. Suit was brought against the doctor and damages totalling \$12,000.00 assessed against him.

3. *Injury to the patient resulting from mouth-gags, etc.*—Injuries to the patient as a result of mouthgags, laryngoscopy etc., during an anaesthetic have at times been the cause of an action. For example: In this case a tonsillectomy was being done on a 5 year old child. During the anaesthetic the Jennings type mouth gag slipped and loosened a lower incisor tooth so that it had to be removed. The patient's parents threatened action against the anaesthetist when she tried to collect her bill. The threat was based on the statement of the parents that the tooth removed was a permanent one and not a first tooth.

This might be a good time to point out that many of the nuisance suits arise when the doctor attempts to collect his account. It is well to remember that in most Provinces (but not in Quebec) there is a law known as the Statute of Limitations. This states in effect that an action must be begun against a doctor within one year from the date of his last attendance upon the patient for the condition out of which the action arose. In a Province where a statute of this kind exists, where the doctor feels that trouble may arise when collection of his account is attempted, he may defer billing the patient until thirteen clear months have elapsed since he last saw the patient.

Another example of injury sustained as a result of the anaesthetist's efforts is the following: During an operation on this male patient it was found that intratracheal anaesthesia was necessary. Intubation was difficult and damage to the patient's dental bridge resulted for which he claimed recompense. This type of accident could be avoided if the teeth are adequately protected.

4. *Accidental massive over-dosage.*—The following is a good example of the point I was trying to make earlier, that you should remember to pay careful attention to all the details of your work. In this instance anaesthesia for a tonsillectomy was being carried out on a 9 year old child. Open vinyl ether was used for induction. Intratracheal intubation was carried out, and the intratracheal tube was attached by a Y-connector to an ether bottle to supply ether vapour. In some way the connections of the ether bottle became reversed

and a jet of pure liquid ether was forced into the child's lungs with immediate cessation of breathing and of the heart beat a few minutes later. Cardiac massage and artificial respiration restored the circulation, but the patient did not regain consciousness and died 48 hours later. Suit against the hospital and the anaesthetist resulted in a settlement to the plaintiff of \$1,700.00, plus the costs of the action.

Such accidents as this could be prevented. Don't let them happen to you.

5. *Sudden death.*—Sudden cardiac arrest or ventricular fibrillation occurs every so often with many types of anaesthesia. As far as we know now many of these deaths are not preventable. Nevertheless, every safeguard should be taken and careful attention be paid to the early detection of arrhythmias so that appropriate measures may be taken.

#### SPINAL ANAESTHESIA

In connection with spinal anaesthesia I would like to tell you about two cases which came to our attention, both of which have points in common. Strictly speaking both these cases are examples of spinal anaesthesia supported with pentothal.

In the first instance, a 15 year old girl was being operated on for acute appendicitis. Spinal anaesthesia with pontocaine (20 mgm.) was given preceded by ephedrine 75 mgm. intramuscularly. Anaesthesia was taken to D6. An intravenous infusion of 1,000 ml. of 5% glucose in water containing 1/1,000 pentothal was started. While the operation was in progress the patient complained of some discomfort. The pentothal rate was increased. Two minutes later her pulse became faint and weak, respirations became irregular and augmented respiration was started. Matters became worse and cardiac massage was begun and 10 ml. of 1% procaine was given intravenously. Intracardiac adrenalin was given, but her heart failed to respond and the patient died. Autopsy revealed nothing but acute pulmonary oedema, thought to be secondary to the cardiac arrest and artificial respiration.

In the other instance, a 46 year old woman was being operated upon for removal of her uterus. A spinal anaesthetic was given. Because she asked to be put to sleep during the operation she was given pentothal intravenously and promptly died. Autopsy revealed no other cause of death but the anaesthetic.

Cases such as these may happen to any anaesthetist and may result in a suit against him for negligence or malpractice.

#### INTRAVENOUS ANAESTHESIA

Intravenous pentothal anaesthesia has resulted in a number of our cases. The chief cause of trouble seems to have been the depositing of some of the pentothal subcutaneously, with resultant inflammation and claims of permanent

disability. The following are two typical claims in this regard.

In the first, a little pentothal escaped into the subcutaneous tissue during the first and unsuccessful attempt to enter a vein in this middle aged lady. Subsequent to operation the patient developed difficulty in using her right hand and arm, especially the thumb and index finger. Threat of action followed this accident. In the second, following an intravenous pentothal anaesthetic this patient developed a paralysis of her arm. She believed this to be due to the anaesthetic and claimed damages.

As I have said, these suits are by no means rare, so it behoves anaesthetists to be particularly careful in the administration of these intravenous anaesthetic agents.

At this point it might be well to draw attention to the possibility of brachial plexus damage from positioning of the arm on the arm board. At times, from the positioning of the patient on the table there may be undue stretching of the brachial plexus with resultant weakness of the arm or actual paralysis. Usually, it is true, these disabilities are only temporary, but at times they are permanent. Another offending piece of apparatus is the operating table shoulder brace with the patient in the Trendelenburg position. At times, these also have resulted in paralyses.

#### LOCAL ANAESTHESIA

Local or regional anaesthesia also has its pitfalls, witness the following cases: A male patient was to have a fusion of his thumb done. A brachial plexus block was done, but in carrying out this procedure the needle entered the pleural space and a collapse of the corresponding lung occurred. This collapse required that a catheter be inserted into the pleural space and the air aspirated. Subsequent course of the patient was uneventful. Nevertheless, the patient sued the anaesthetist, who happened to be an intern, the staff anaesthetist who was supervising the anaesthetic and the surgeon. These three were, as they say, joined in the action. The court proceedings took the better part of five days, and the case was finally dismissed. Here was a case where there should never have been any action at all, but nevertheless, there was, with all the attendant expense and loss of time.

A 28 year old male patient came to a clinic in a city because he had a splinter of wood in his thumb. It was decided to use a local anaesthetic and remove the splinter. Accordingly what was thought to be 1 ml. of 2% novocain with Suprarenin was injected about the base of the thumb. About six minutes later the patient became faint, cyanotic, dyspnoeic and had a convulsion. In spite of artificial respiration and cardiac massage, the patient died. It was found that, in error, 1 ml. of 1/1,000 adrenalin had been injected instead of the novocain. At the inquest the jury brought in a verdict of negligence as the cause of the

patient's death. Subsequently a suit was brought against the doctor and the clinic in which he was working. Damages in the amount of almost \$50,000.00 were awarded.

The first of these two cases illustrates how an anaesthetist may be sued for a mishap which produced no permanent damage and which, moreover, could happen even to the most skilful anaesthetist once in many cases. The second simply points out the need for care and more care to prevent mistakes in the agents being injected. Just why this man died after 1 ml. of 1/1,000 adrenalin was injected, even if it were into the blood stream, is not certain. It is a well known procedure in some clinics just before a spleen is removed to inject 1/2 ml. of this solution into the circulation of that organ, apparently with no ill effects.

So much, then, for the type of accident which has in the past resulted in law suits being brought against anaesthetists. As you can see from the foregoing, serious consequences sometimes arise from what appear to be relatively minor mistakes. How then can you, as anaesthetists, help to avoid such accidents?

First, you must be well versed in your specialty, and you must keep up-to-date. Second, you must use your best judgment in every case and be able to support your decision with valid reasons.

Third, you must use every care in your work, no matter how tired or busy you may be. Attention to detail no matter how routine or how many times you have done the same thing before is the prime factor in your safety and that of your patient. Remember that in medicine we all have to depend to some extent on others, nurses, interns, etc., and that they are fallible too, so check and recheck important points. Do not proceed unless you are satisfied that all is well. A little delay while you satisfy yourself with every detail is time well spent. So often it is the little routine matter glossed over that results in an accident.

Fourth, keep good records. You should have done a history and physical examination yourself and have recorded it before you go on to give the anaesthetic. In Ontario this is required by the Ontario Hospitals Act. Whether it is required by law or not, have a brief but pertinent history and physical examination recorded on each patient before operation. This is all the more important since anaesthetists have been recognized in the courts as being fully responsible for the anaesthesia and its consequences. It is remarkable how important these records can become if trouble develops.

Fifth, when a suit is impending, do as little talking about it as possible, particularly to the plaintiff or his lawyer. More doctors have talked themselves into trouble than have ever talked themselves out of it. Unwise statements have a way of boomeranging and providing material which can be used by the plaintiff against you.

One concise and factual explanation to the plaintiff is all that is necessary or safe. Do not deal in conjectures or opinions, simply state facts. Once you have given this one explanation, say nothing further. If more information is requested of you simply state that you have given a full factual account already and have nothing further to add.

Sixth, when you yourself are not in trouble but some other doctor is, don't make his way any harder by unwise conjectures on your part about the accident to the plaintiff or his friends. It is remarkable how many unnecessary actions have followed an unwise and uninformed statement made by another doctor to the patient or his relatives. Remember he was the man who had to make the decisions and do the job, often under circumstances with which you are not familiar. Put yourself in his place and act accordingly.

To sum up then: The important points in your safety if a suit develops are your skill; your judgment; your care; your records; your silence.

In conclusion, for your protection all of you should have some form of organized assistance in case you become involved in a law suit for malpractice or negligence. I feel strongly that the best way for you to gain this assistance is to join the Canadian Medical Protective Association. It is your own association made up of Canadian doctors joined together for the prime purpose of assisting one another when law suits or threats of this kind arise.

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## A COMPLAINT? DON'T GET MAD

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SOMETIMES, though it may be an expensive way to learn, more can be learned from the awkward, wrong handling of a case than from the proper management of the same critical, delicate situation. About four years ago a surgeon was called in the middle of the night to see a patient who was gravely ill with a condition that suggested a perforated viscus as its cause. At operation a ruptured gangrenous appendix was found and there was extensive peritonitis. Recovery was stormy and prolonged. About a month after operation there were signs of pus in the abdominal wall and a second operation resulted in the evacuation of much pus. Although the first operative wound healed, the second one had not healed two months later when a nurse who was doing the dressings identified and removed a small gauze square, not an abdominal pack but

one of the small sponges used for wiping the surface of wounds.

When she first recognized the sponge the nurse, before touching it, attempted to reach the surgeon but he could not be found so she removed it and saved it to show him when next he visited the patient. He saw the patient the following morning and later on it was stated by the patient, by the graduate nurse who had been doing the dressings and by a third person who was present when the doctor arrived, that he became mad, blamed the operating room nurses and said they were supposed to count the sponges, that the patient must have had a strong constitution and that but for the gauze he would have had a shorter stay in hospital. There was, as far as testimony was given, no straightforward, reasonable attempt on the part of the doctor to provide the patient with a fair explanation of how the sponge might have been left in the wound.

The complaint progressed through the usual stages, threats, demands, lawyer's letter and finally a writ, issued and served on the surgeon and his assistant. The case came to trial and as trial progressed two things became evident, that it would be difficult to establish responsibility for the presence of the sponge and that the damage to the plaintiff had been slight. The presiding judge asked if the two defendants, the surgeon and his assistant, would be willing to accept dismissal of the action without costs and whether the surgeon would be willing to forego his fee. The arrangement was satisfactory to them. The plaintiff was willing to drop the action and it was dismissed against both defendants without costs.

Lest it be thought such a course of action is cheap and easy it should be said that the surgeon lost his fee of about \$200; out-of-pocket expenses of two expert witnesses who had to be present were about \$200 and legal expenses were \$1,192.50, a total of nearly \$1,600. No—or almost no—legal defence is cheap!

The Canadian Medical Protective Association's Counsel was of the opinion that the actual claim and necessity for trial were, in large part at least, due to the very maladroit handling of the first complaint by the patient. It is difficult to understand how the surgeon felt he might escape responsibility by blaming the nurses. There was no question of an abdominal sponge having been left, therefore no question of a lack of sponge count or a faulty sponge count. The sponge recovered was one of the type for which the surgeon is wholly responsible.

Under these circumstances there never is any use getting mad at a patient. Who wouldn't resent having a forgotten sponge prolong an illness? A forgotten sponge surely is a good cause for complaint but even if there were no cause for complaint getting mad does no more than make it likely the doctor will say something to

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increase the patient's dissatisfaction. It does not remedy the situation.

Rather, a patient should be given as fair an explanation as can be, it should be factual and where facts are not available it should be so stated without any opinion being expressed. Above all, the explanation should be concise. In the vast majority of cases things left unsaid can do no harm and anything not readily susceptible of proof may be used against the doctor later. Bearing these things in mind, an explanation should be suited to the mentality of the patient, there is no use being meticulous and precise in the description of something of which the patient has not the faintest comprehension. That only serves to confuse further and to irritate an already confused, dissatisfied patient.

Finally, if the work giving rise to an accident was done as carefully and as well as it was in the doctor's power to do it, the explanatory statement should say that the accident occurred in spite of all the precautions the doctor could take.

There should be no further discussion and any attempt by the patient or friends or lawyers to re-open it should be met with the courteous statement that all the facts were given the patient at the beginning and that there is no more to be said.

## MEDICAL ECONOMICS

### NATIONAL HEALTH AND HEALTH SERVICES

*[We reprint below a statement approved by the 24th Annual Meeting of the Canadian Chamber of Commerce, Edmonton, September, 1953. It is a most admirable summing-up of the point of view of our own Association: the necessity for training of personnel; the fundamental importance of social welfare outlays; the recognition of the due responsibility of the individual regarding the cost of his medical care; the necessity for government aid for the indigent sick, but opposition to any form of state medicine; the realization that the cost of a compulsory and comprehensive national health program cannot be reasonably forecast; and finally the belief that the growth of the various voluntary prepayment and insurance plans will eventually lead to a satisfactory coverage against the costs of health services, except of course in the case of the indigent group, in which government assistance is essential: all these bear continual re-statement and we are glad to republish them in this excellent summary.—EDITOR.]*

THE ATTAINMENT of the highest possible standards of health is desirable. A healthy people constitutes one of the most valuable resources of the Nation.

The problem of national health involves consideration of (1) prevention, (2) cure and rehabilitation, and (3) care of the chronically ill and incurable.

Most important is the prevention of disease and of accidents. This phase of the problem must be dealt with through an accelerated program of public education in health matters and in safety measures.

Adequate medical services and facilities must continue to be developed throughout Canada, and an increasing number of medical personnel trained, so that the Canadian people may be assured of proper medical care (which includes hospital care) when needed.

The national health does not depend upon health services alone, but also upon proper food and shelter. The existing social welfare program contributes in this latter respect, and in considering government outlays for health services, due regard must be had for the annual commitments which include Old Age Assistance, Old Age Security, and Family Allowances, all of which involve very substantial recurring costs paid for by the Canadian people.

The Chamber believes that in a free society it is the responsibility of the individual to bear the cost of medical care for himself and his family. The Chamber endorses the action of many employers in assisting their employees in meeting the cost of medical care. The Chamber is impressed with the rapid development and growth of voluntary service and indemnity plans for prepaid medical care. These voluntary plans should be encouraged, with aid from employers when appropriate.

It is recognized that government aid is necessary in the development of adequate health facilities throughout Canada. The Chamber endorses the program of health service grants by Federal and Provincial Governments and believes that these grants should be as liberal as possible, bearing in mind that government revenues come from the people and that existing annual commitments for social welfare benefits already are substantial and are increasing. The Chamber believes that the contributions made by governments to assist private organizations in caring for the indigent sick are unrealistic, and inadequate in some instances, and should be increased.

The Chamber is opposed to any form of compulsory health insurance or state medicine. So-called "free" health service would result in vastly increased demands upon them. Some of this increased demand will be to meet genuine need, but a good part of it will arise from persons demanding treatment as a right for imaginary ills or illnesses of no serious consequence which ordinarily do not require medical attention. It seems generally to be recognized that it is impossible to forecast with any accuracy the probable cost of a compulsory and comprehensive national health program, but it is inevitable that its cost would substantially exceed the amount spent today on health in Canada.

The Chamber believes that the continued rapid growth of the various voluntary prepay-

ment and insurance plans will soon result in the Canadian people being reasonably well covered against the costs of health services without sacrifice of individual responsibility. The only exception is in the case of the indigent. The Chamber believes that the high standard of care now provided will be extended in future to reach the whole of this group with the further development of health services on a voluntary basis, with government assistance.

## MEDICAL SOCIETIES

### THE CENTENARY OF THE NOVA SCOTIA MEDICAL SOCIETY

*[This short impression has been contributed by Dr. S. S. B. Gilder on his recent visit to Canada. Unfortunately Dr. Gilder was unable to witness more than one and a half days of the week's proceedings, but it augurs well for his future editorial work with our "Journal" that he has so soon begun to interest himself in the Canadian scene.—EDITOR.]*

To the observer from Europe, the striking feature of the Nova Scotia Medical Society's Centenary Meeting was the extraordinary similarity in atmosphere to a meeting of Scots on the other side of the Atlantic. At the luncheon on Thursday, Mayor Donoghue was at pains to point out, in his lucid and comprehensive survey of Nova Scotian history, the cosmopolitan nature of the population of this most interesting province. French, Germans, and others have made substantial contributions to the development of the New Scotland, but the general tone of the meeting suggested that like "the little leaven that leaveneth the whole" the Scottish influence had heavily infected all with whom it came in contact.

Without ever falling into the sin of *hubris* or insolent pride, the Nova Scotians quite rightly pointed out the considerable achievements of a province whose most precious raw material is the men and women it contains. The old and the new Scotland are alike in that they combine a certain grandeur of scenery with a relative lack of material resources. They are alike in their consciousness of more favoured neighbours and in their obvious love of and respect for learning. It hardly needed the piper who piped the high table in to the Centenary Dinner on Friday night to underline a comparison so obvious.

The speakers who graced the after-dinner proceedings in the charming ballroom of the Nova Scotian Hotel spoke with dignity, sincerity and due regard to the ancient virtues. Dr. James Reid's scornful denunciation of the cult of "something for nothing" would have earned the grave approval of those Edinburgh worthies who flourished in an age when Scottish medicine was sweeping the board in Europe, and when the primary aid of philanthropy was to help the deserving and not the undeserving.

Friday evening closed with a delightful presentation of a short play "Lister visits Dalhousie", in which Lister by that species of magic so dear to playwrights was transported in a dream to Dalhousie University of today. In the play, Lister was bewildered by the things he saw and heard. We venture to suggest, however, that he would

not have been puzzled in the slightest degree by the Dalhousie way of thinking as it emerged during the Centenary Meeting. It would be hard to name another place in the world of today in which Lister, with his contempt for humbug and nonsense, would find himself more completely at home. S.S.B.G.

### DISTRICT MEETING OF QUEBEC DIVISION

A clinical day of great interest was held on October 24 at Chicoutimi, P.Q. The meeting had been organized at the request of the Saguenay and Lac St. Jean District with the co-operation of the Quebec Division of the Canadian Medical Association. It had been felt for some time that this district, one of the most northerly in the Province with a group of medical men serving a large, scattered population, would welcome a visit from our Division, and this was accordingly arranged.

Chicoutimi is within easy reach of Quebec City, by means of an excellent road, and with the slight lull in local meetings and before the winter settled down, this day was chosen for the gathering.

The Hotel-Dieu St. Vallier at Chicoutimi was the place of meeting, and none better could be asked for. A new wing had recently been completed and the sessions were held in an extremely pleasant and well equipped hall.

The proceedings opened with a luncheon provided by the hospitality of the Rev. Sister St. Louis, superior of the Hospital, under the chairmanship of Dr. E. Potvin, and Dr. Renaud Lemieux, President of the Division, spoke briefly of the aims and work of the Canadian Medical Association.

The scientific program which followed consisted of a series of papers by the following: Dr. G. Leclerc of Notre Dame Hospital, Montreal, who spoke on Contact Dermatitis, showing excellent coloured slides; Dr. E. F. Crutchlow, radiologist of the Montreal General Hospital, dealt with the "X-ray Diagnosis of Bronchogenic Carcinoma"; Dr. J. Leo Walker, orthopaedic surgeon of St. Mary's Hospital, Montreal, gave a concise account of "Affections of the Spine"; followed by an address by Dr. G. A. Copping, physician to the Montreal General Hospital, on "Medical Aspects of Old Age". Dr. J. M. Lemieux, Assistant Professor of Surgery, Laval University, closed with a paper on surgery of tuberculosis of the lung. Drs. Simard and Lapointe acted as most efficient co-chairmen and the organizing ability of Dr. Sylvio LeBlond was very evident.

All the papers were given in French, and the discussion which was animated, took place in both languages. There was little doubt of the keen interest aroused, and by general agreement the meeting was of considerable value.

Chicoutimi and its neighbouring towns of Arvida and Kenogami form a district of great industrial activity. The main industry of course is the production of aluminum in which thousands of workers are employed. This together with the tremendous water power development at Shipshaw and various points in the Saguenay valley and the lumber industry has led to the formation of a flourishing and intensely active community within the region of the valley and Lac St. Jean. The Chicoutimi hospital is of 700 beds, later to be enlarged to 900, and serves as a training institution for some of the interns graduating from Laval University of Quebec.

The Canadian Medical Association welcomes most warmly the interest in its work as evidenced by this gathering. It was shown conclusively that a thoroughly satisfactory meeting could be organized and carried through in both French and English, and augurs well for further developments in organized medicine in this area.

## MISCELLANY

PUBLIC RELATIONS  
PRESCRIPTION FOR M.D.'s

[*Let's Face It—Everybody Does Not Believe in His Doctor Today. This Is the Public Relations Problem That Must and Can Be Solved.*]

ROBERT R. ROBINSON,\* Toronto

Like good health, good public relations is something that everyone is in favour of in a general sort of way, but which very few people understand. And a symptom of its absence is much more readily recognized than is its unobtrusive, smoothly functioning presence. It is not appreciated until you wake up some morning and find it missing.

"Public relations" is not a commodity to be purchased over the counter like so many pounds of sugar; nor even a luxury item to be selected in the presence of indirect lighting and subtly suggestive decor like lingerie. You don't just walk up and put your \$10,000 or \$15,000 on the line and come away with a neatly wrapped parcel of "public relations".

Fundamentally, public relations is a matter of attitude—first, and most important, of your own attitude toward yourself and the purpose of your life; then, your attitude toward other people; and, inevitably a product of the first two, the attitude you evoke in others toward yourself. It is not a mask to be worn to cover up blemishes.

*What will show up?*—I was at a meeting a few weeks ago which was attended by a dozen men and women charged with the responsibility of tending the public relations activities of their respective organizations—in this case voluntary health and welfare agencies. They were meeting ostensibly for the purpose of working out an improved public relations program; but all they actually talked about was the technique of attracting more and more public attention to their activities (naturally with a view, then, to enticing more dollars into their hungry treasuries). It did not occur to most of those present that merely to switch on the high-powered publicity spotlight might do more harm than good, unless they first took pains to polish up their internal relations and attitudes so they would look bright and honest and good to the public.

Too many otherwise perceptive people fall into this same trap and try to daub on bright patches of "public relations" here and there like some magic, new cosmetic. Too often the public, like a mesmerized bridegroom, is lured into the boudoir only to be abruptly disillusioned by reality.

*M.D.'s had good P.R. once.*—A few years ago, at least in the smaller communities in which I was brought up, the term "public relations" was unknown. But the practice of good public relations was indulged in with consummate success by the local medical practitioners. How do I know? Because these men and their families were looked up to by everybody else in town, regardless of which side of the tracks they came from. These doctors were trusted implicitly, their wisdom was unquestioned, their honesty above reproach.

Today, due to a complexity of factors many of which the medical men and women are not themselves responsible for, doctors are not held in universally high esteem. Far from laudable motives are not infrequently attributed to them, and too many Canadians feel that calling in a physician is a last, desperate resort to a necessary evil. So far do some decry their dependence upon the medical profession that they are wishing for—and some are working for—the day when the government will step in and tell the doctors where to go, what they may do, and how much they may charge for their services.

\*Director of Public Relations, Health League of Canada, Managing Editor *Health*.

*Black sheep blacken all.*—It would be dishonest to deny that there are members of the medical profession, as there are members of every other calling on this earth, who fail to conduct themselves and their practice according to acceptably high standards. And it is unreasonable for the general public to condemn the entire profession because of the backsliding of its relatively few black sheep. Unreasonable—yes; but it is done. And this is the fact that must be faced.

Take my own case, for example. I know it is unscientific to generalize from a single case; but the comments I have picked up from friends and acquaintances would seem to indicate that this is not entirely atypical. I lost my father when he was only 48 years of age, just beginning to enjoy life thoroughly; and I am not convinced that he had to die following an appendectomy which was not an emergency and which was done in an adequate hospital situation by reputedly competent doctors. If there was some condition that made his death inevitable, how much better it would have been for the doctors involved and for the reputation of the medical profession in the eyes of all my father's family and friends if the results of the post mortem, which my mother requested, had been understandably explained. Instead, I got an earful of medical gobbledegook which has left me wondering and doubting to this day. And in my mother's case, it produced a deep and indelible mistrust of all doctors—unreasonable, if you will, but entirely human.

*Half the price; twice the service.*—Or take my wife's experiences with childbirth. The two of these to date offer an illuminating contrast. For the first, we sought out the most highly acclaimed obstetrician in the city, more than willing to pay top specialist fees to guarantee the safe arrival of our firstborn. Nothing was too good—but the service wasn't up to the price. Oh, the baby arrived safely—delivered by a staff physician at the hospital in the absence of both the obstetrician and her assistant (and very nearly in the absence of the anaesthetist!). But we were left wondering, if the bill for \$125.00 was really worth it. We have wondered a good deal more, I might say, since our much more satisfying experience with a good general practitioner who delivered our second son for \$50.00—and with a much stronger show of interest in the welfare of all concerned.

I don't cite these personal experiences simply to complain. They illustrate, at least to me, points at which the public relations of the medical profession can definitely be improved. And these points, basically, will always be found to be the points of contact between individual physicians and individual patients and their families. What is achieved at this sparking point depends, in the last analysis, upon the attitude of each doctor. And the individual reactions of the two and a half million Canadians who went to their doctors last year make up the climate in which the medical profession now finds itself.

*The right kind of attitude.*—Here's what I mean by the right kind of attitude. . . . A month ago I was in the consulting room of one of the city's younger otolaryngologists when he was called to the phone. I heard him say something to this effect: "Well, I certainly would like to see her again before we let her go home. It's a long trip for her to come to Toronto. But I hate to keep her in the hospital running up bills. Can't we find her some place else in the city where she can stay for a few days? . . ."

What it boils down to is this: the public relations position of the medical profession will improve in direct proportion to the consideration individual doctors give their patients as *real human beings* and as *total human beings*. If patients are going to be shuttled in and out of offices like so many units on a vast, impersonal assembly line, then members of the profession are only giving credence to the charge that the Canadian Medical Association is the country's tightest, toughest, most highly paid trade union.

*It all starts at home.*—This discussion of attitude is perhaps sufficient to demonstrate that the real starting

point for better public relations in the medical profession is not the spectacular and expensive show window sort of thing at all. The real starting point is back home in each member's mind and heart.

It every doctor could somehow retain to his dying day that first quickening he felt deep inside at the earliest realization that he, or she, was going to be a doctor! This was no vision of a big home, two cars, social prestige, money. It was, I venture to say without exception, a vision of service to mankind. It was much more likely to have been evoked by stories of the great physicians of the past and their tradition of selfless devotion to duty than by thoughts of material gain. Let the material rewards come, of course; but let them not be sought after to the destruction of every bit of that original good impulse. Keep the fire of inspiration burning brightly, stoke it up with thoughtfulness and consideration and kind deeds done, and the public relations problem will be solved.

*The essential task.*—What the essential public relations task comes down to is this: to keep members of the profession continually reminded of the public service tradition that is theirs, to encourage the strengthening of this tradition through all the means available—medical school, professional journals, association meetings, letters; and, when the foregoing program is well under way, to let the public see—first by individual experience with their own doctors, and then through all the modern means of mass communication—that the medical profession is continuing to serve them according to their highest expectations. Neither the medical profession nor the public which its members serve will then be disappointed—and both will benefit immeasurably.

## CORRESPONDENCE

### ON FEE SPLITTING

To the Editor:

In *Collier's Magazine*, dated October 30, 1953, there appeared an article head-lined "Why Some Doctors Should be in Jail". The frontispiece depicts two masked individuals (presumably doctors), who, without any great stretch of imagination have a mysterious and rather treacherous look of Sapho the Killer or Dr. Jekyll and Mr. Hyde. The article itself goes into the question of fee-splitting and its evils, and one of its pages is replete with a disgusting array of "medical exhibits". The title of the article does contain the word *some* (italics mine) lest the reader infer that most or all doctors are fee-splitters. It also does bring out the fact that "unquestionably the great majority" of the medical profession are ethical and that fee-splitting violates "the A.M.A. Principles of Medical Ethics".

All that is perfectly true, and thank Heaven for the wise men found in our midst to teach and guide us in the paths of righteousness! Obviously no decent medical man can have anything against this *per se*, or the intent to cleanse the profession of its unethical practitioners. However, one must also pause to consider the *manner* in which the problem is aired and the *means* by which the matter is taken up.

Characteristic is the way a good many patients and lay friends have received the article, in the experience of this writer: "Doctor, what do you think of that? Isn't it terrible?" etc. And one is prompted to answer: "Yes, indeed it is terrible. But this is no new discovery. There are black sheep in every herd. And what about drug peddlers? And what of abortionists? And fee-splitters with druggists? And baby sales?"

But above all: do doctors think that the most effective and most ethical way of combating fee-splitting, and indeed all other unethical rackets, is by smearing the question over all magazine kiosques and ash-cans, and by having large-size photographs of their faces, stetho-

scope, microscope and what have you, displayed in lay magazines?

Surely there can and must be a more ethical and above all, a more effective means of complying with the command of "The hand of the witnesses shall be first upon him . . . and afterwards the hand of all the people. So thou shalt put away the evil from the midst of thee" (Deut. 17, 7).

I should also like to refer the medical profession to the following wise teachings of some of the ancients: "Physician, heal thy own limp" (Bereyshith Rabba, 23); "Take the chip out of thy teeth, take the splinter out of thy eyes" (Baba Bathra, 15); and last but not least, the words of old Avtalyin—"Ye sages, be heedful of your words, lest . . . the disciples who come after you drink thereof . . . and the Heavenly Name be profaned" (Avoth 1, 11).

Montreal, October 21, 1953.

M. ETZIONY

## SPECIAL CORRESPONDENCE

### The London Letter

(From our own correspondent)

#### DEVELOPMENTS IN RADIOTHERAPY

The first important hospital building to be completed in London since the war has just been opened at Hammersmith Hospital. It has been built for the radio-therapeutic research unit of the Medical Research Council, and houses an 8 million volt linear accelerator and a cyclotron. The linear accelerator is an interesting development of the magnetron which is the basis of radar. It derives its name from the fact that it consists of a specially designed straight copper tube, 3 metres in length, down which a beam of electrons is accelerated by very high frequency radio-waves. It is the development of microwave valves, such as the magnetron, that has made possible the use of such radio-waves.

This is the first machine of its kind to be built for x-ray therapy and has been designed by the Atomic Energy Research Establishment in conjunction with the Medical Research Council. Its outstanding contribution to radiotherapy is that for the first time there are incorporated in this one machine all the facilities needed to permit the full exploitation of the technical advantages to be gained by using very high energy radiation. It makes possible the delivery of an adequate dose to a deep-seated tumour of highly penetrating 8 million volt x-rays, collimated into a well-defined, high intensity beam which can be directed into the patient at any angle. The high intensity shortens the time of each treatment to about two minutes, and the extremely penetrating nature of the x-rays allows the delivery of a high dose to the tumour without any danger of damage to the skin.

The 45-inch cyclotron is to be used for investigating the effect of neutrons on living and inert matter, and to determine whether neutrons are of value in the treatment of malignant disease. It will also be used for the production of radio-isotopes, particularly those of such short life—e.g., a few minutes—that they must be produced in immediate proximity to the patients in whom they are to be used.

#### PRICES OF PROPRIETARIES

The latest step in the Ministry of Health's campaign against proprietary preparations has produced some interesting results. The Ministry has issued to every practitioner in the National Health Service a leaflet showing, among other things, the relative costs of 243 proprietary preparations and the equivalent standard (or

official) preparation when such exists. This list shows that the cost of the proprietary preparation, compared with that of the equivalent standard preparation, is higher in 67, lower in 47, and the same in 10; for the remainder no equivalent standard preparation is named. The proprietary preparations which are cheaper than the standard drugs fall into five main categories: sulphonamides, barbiturates, vitamins, oestrogens, and androgens.

As *The Lancet* points out: "These figures should dispel the impression that nearly all proprietary preparations are needlessly expensive; and clearly the practitioner can continue to prescribe some well-tried proprietary preparations without misgiving". In other words, the pharmaceutical manufacturers have not been the "nigger in the woodpile" where the nation's drug bill is concerned, which has been the innuendo of all Ministry statements of recent years. Perhaps, if the Minister goes outside the walls of his Ministry for advice, he will be able to appreciate that the problem is a much more complex one than his advisors have been trying to make out.

#### NEW INSTITUTE OF CLINICAL RESEARCH

When the teaching hospitals were incorporated in the National Health Service, they were left with considerable endowment funds, over the disposal of which they had complete control. The Middlesex Hospital has allotted a considerable proportion of its endowment funds to the establishment of an Institute of Clinical Research which has now been opened in premises adjacent to the hospital. Some £107,000 has been spent on the purchase of the building and its conversion and equipment. The aim of the institute is to provide the consultants of the hospital with research facilities for their exclusive use and distinct from the laboratories of the medical school. Facilities are available for animal investigation as well as direct investigations in patients. The biochemistry and pathology laboratories are in the immediate charge of technicians from the corresponding departments of the hospital. This is a new development for a London teaching hospital, and its progress will be watched with much interest.

#### G.P. HONoured BY R.C.P.

At the Harveian Oration on October 16, Dr. W. N. Pickles, of Aysgarth, Yorkshire, was presented with the Bisset Hawkins Medal of the Royal College of Physicians. According to the citation, "As a student of epidemiology, he stands in the forefront. But perhaps his outstanding achievement is the demonstration that scientific observation and deduction is not only possible under the pressure of a busy general practice, but is a constant stimulus to the quality of the service that the general practitioner can give to his patients." The Bisset Hawkins Medal was founded in 1896 by Captain Edward Wilmot Williams, with a gift of £1,000 to the College. It is awarded for notable work in the field of public health. The last recipient was Sir Wilson Jameson, the former chief medical officer to the Ministry of Health. London, November, 1953. WILLIAM A. R. THOMSON

## OBITUARIES

DR. ROBERT MAXWELL COSTE died October 15 in Vancouver, his war injuries contributing to his early death. As a student at Upper Canada College, Dr. Coste's ambition was to become a flier and when war broke out in 1939 he was already a member of the R.A.F. On one of the first bombing missions over Wilhelmshaven on September 29, 1939, he was shot down over the North Sea. Picked up by a German oil tanker he was taken to Germany and put in a prisoner-of-war camp.

He was a prisoner in Germany from that date to April, 1945, and was housed in 28 camps, including the in-

famous Stalag Luft III. He tried to escape four times and was captured; twice he was beaten to discourage further attempts.

It was in prison he decided to become a doctor. With books supplied by the Students' Relief Fund at Geneva and through help of British doctors among his fellow prisoners, he successfully passed his first examinations set by the University of London toward his M.D. degree. He was transferred to hospital camps at Obermassfeld and Meiningen to continue his studies. He finished his training in 1950 with a two-year course at the University of Toronto.

On graduation Dr. Coste went to Calgary to set up a general practice. He later moved to Vancouver where he died. Besides his widow, he is survived by his parents, and a brother, E. F. Coste.

DR. GEORGE P. FORTIER, aged 44, died on October 6 in Edmonton. A graduate of the University of Alberta, Dr. Fortier was a former resident of Trochu. After completing two years' postgraduate work in Montreal, he established his practice in Edmonton. He is survived by his widow, two sons and three daughters.

DR. N. S. FRASER, O.B.E., M.D., C.M., F.R.C.S., dean of the medical profession in Newfoundland, died in October last. Born in St. John's in March 1864, Dr. Fraser was educated at the Methodist College here and at Queen's University, Kingston, Ont. Upon graduation, he entered Edinburgh University to study medicine. He received his M.D. in 1886 and after a brief period of post-graduate work at the Children's Hospital in London, England, he returned to St. John's to begin a life of devoted service to the people of this city.

In 1893 Dr. Fraser was recognized by the Government of Newfoundland which appointed him to the first medical board formed under the Medical Act.

He was a member of the Medical Board for 60 years and its esteemed president for the past 25 years. He was also a senior member of the Canadian Medical Association and active in the Association right up to this year.

In 1936, Dr. Fraser marked his 50th year in medicine by writing a thesis for which he was awarded a doctorate from Edinburgh University. He was prominent in church circles and a faithful member of St. Andrew's Kirk as an Elder and a teacher in Sunday School. Four sons survive. His wife predeceased him nine years ago.

DR. WILLIAM GEIGER, aged 71, died October 4 at Waterloo. Dr. Geiger graduated from the University of Toronto medical school in 1910. He was born February 11, 1882. A former Waterloo medical officer of health, the doctor was a member of First United Church, Waterloo, Germania I.O.O.F. Lodge and the Canadian Order of Foresters. His widow survives, three sons and one daughter.

DR. NELSON GEORGE, died suddenly October 3, at his home in London, Ont. Born near Strathroy in Adelaide Township, he graduated from the University of Western Ontario Medical School in 1909. Dr. George taught school in Warwick and Adelaide Townships, and was a business college teacher in London, before he entered medical school. During his career Dr. George was a member of the board of the Academy of Medicine and was on the staff of Victoria Hospital several years. He was also a member of First St. Andrew's United Church, a former elder, and at the time of his death was an honorary elder. His widow survives.

DR. HUXLEY H. C. JOHNSON, aged 36, died on October 7, of poliomyelitis. He was born in Calgary, attended Mount Allison University at Sackville, N.B., where he received a bachelor of arts degree. He won his medical degree from Queen's University, Kingston, in 1945. He served in the Royal Canadian Army Medical Corps. From 1947 to 1948 he was on the staff of Keith

Sanatorium and since leaving the institution has been in private practice in Calgary. He is survived by his widow, two sons and two daughters.

**DR. LORN WYATT McILWRAITH**, died suddenly, September 16 in Brantford. Born in Woodstock, March 31, 1887, Dr. McIlwraith received his education there and at the University of Western Ontario, London, from which he obtained his medical degree in 1912. He started practice at North Pines, near Sioux Lookout and then went to Thamesville, where he practised for 21 years. In 1939 he came to Brantford and has been prominent in many phases of community life. In the First World War, he was medical officer at Christie Street Hospital and in the Second World War he was medical officer of the Second Battalion, Dufferin Rifles. Dr. McIlwraith was active in Central Presbyterian Church, being a member of the Session. He was a past master of Ozias Lodge A.F. & A.M., past president of the Brantford Scottish Rite Association, past grand of Mohawk Lodge, I.O.O.F., past president of the Brantford Historical Society and a vice-president of the Children's Aid Society. To all these organizations he freely gave service of much worth. Surviving are two daughters and three sisters.

**DR. HELEN MacMURCHY**, internationally known for her child welfare work, died October 8 in Toronto, after a long illness. She was born January 7, 1862, in Toronto.

In 1949 Dr. MacMurphy was named one of the 10 leading women physicians of the western world. The citation was conferred on her at the special convocation of Hobart and William Smith Colleges, marking the 100th anniversary of Elizabeth Blackwell, the first woman doctor to graduate and practice in the United States.

Born in Toronto, she was the daughter of the late Dr. Archibald MacMurphy, one time principal of the Old Grammar School. An outstanding authority on many phases of public health, Dr. MacMurphy had presented papers and addresses on education and medical subjects before medical associations and conferences in London, England, the United States and Canada. She was an honorary member of the University Women's Club, a past president and honorary member of the Women's Canadian Club and a member of St. Andrew's Presbyterian Church.

In 1934 she received the C.B.E. and in 1939 was elected a life fellow of the Academy of Medicine. She graduated with first class honours in medicine and surgery from the University of Toronto Faculty of Medicine in 1901. She was the first woman to intern at Toronto General Hospital and the first Canadian woman to take postgraduate work under Dr. William Osler at the Johns Hopkins Hospital, Baltimore. For seven years she was provincial inspector and assistant inspector of hospitals, prisons and charitable institutions. In 1920 she was appointed by the Dominion Government as chief of the division of child welfare, retiring in 1934.

During the years in which she engaged in private practice in Toronto, Dr. MacMurphy specialized in the care of children and in obstetrics and gynaecology. She lectured on health at St. Margaret's College, Havergal College, Branksome Hall and Bishop Strachan School. She was also assistant demonstrator in obstetrics and gynaecology at the Toronto General Hospital and faculty of medicine, University of Toronto.

**DR. CHARLES FERDINAND MARTIN** died in Montreal on October 28, aged 85. He had been in poor health for some months. Born in Montreal on October 14, 1868, he attended the Montreal High School, took his B.A. at McGill in 1888, and graduated in medicine in 1892. Graduate studies in Germany and Austria between 1893 and 1898. House surgeon at the Montreal General Hospital in 1892. Appointed assistant physician at the Royal Victoria Hospital in 1895, and physician in 1907. In the same year he was appointed Professor

of Medicine at McGill; he had begun as assistant demonstrator in pathology in 1894. During World War I he acted as consultant in medicine in France in 1917.

In 1923 he was appointed Dean of the Faculty of Medicine, the first to devote full time to this work. His extraordinary abilities immediately made themselves felt in the expansion of medicine in Montreal. Largely due to his energy the Neurological Institute was launched. His influence was felt in many other quarters: in mental hygiene, he became president of the Canadian National Committee; in industrial medicine, in which he became a notable stimulus; in all the various activities of a rapidly growing medical centre. At this period he was not teaching, but it should be recalled that he was



(Photo Blank & Stoller Ltd.)

Charles Ferdinand Martin

one of the brilliant clinical teachers of his day. The early medical journals contain many contributions by him.

In 1936, while still at the height of his powers, he was retired in accordance with the age requirements of the University and became emeritus dean and emeritus professor of medicine.

He made fine use of his abilities outside of the University also. In the early 'twenties he was a leading spirit in the rejuvenation of the Canadian Medical Association which had weakened greatly during the war period. His guidance and energy were outstanding in bringing about the rebirth of the Association. He became its president in 1923, and one of the last public ceremonies he attended was the formal bestowal on him of the highest honour within the gift of the Association—the Starr Memorial Award.

He also took a leading part in the rehabilitation of yet another medical organization, the American College of Physicians during its period of stress in 1925-29. He became its president in 1929 and later was given the Stengel Award. He was also president of the Association of Medical Colleges. He was granted an LL.D. by Queen's (1927), McGill (1936), and Harvard (1934).

From Bishop's University he received a D.C.L. He was a charter member of the Royal College of Physicians and Surgeons of Canada.

After his retirement from the Deanship at McGill he became president of the Art Association of Montreal and was also president of the Montreal Repertory Theatre and several other cultural organizations. He was also president of the Royal Alexandra Hospital for some years.

Well known as he was in Canada, he was widely travelled and won international recognition for his achievements in teaching and medical organization and his many qualities of mind and personality. Few men retain to their eighties the vigour and keenness of mind which Dr. Martin showed till his very latest years. He gained the highest honours in his profession and his influence for good was recognized equally in his university, his hospital and his community at large.

He leaves his widow, the former Margaret F. Angus, and one sister, Miss Martha Martin.

(We hope to publish some personal appreciations of Dr. Martin in our next issue.)

DR. C. J. MEREDITH, aged 57, of Valley City, N.D., died September 20 in Minneapolis, Minn. Born in Glenboro, Man., Dr. Meredith served with the Royal Canadian Army Medical Corps in the First World War. Graduating from the University of Manitoba in 1921, he served his internship at the Winnipeg General Hospital, later doing postgraduate work in surgery there. He practised medicine in Marion and Valley City, N.D. until his retirement a few months ago. Surviving are his widow and one son.

DR. CALVIN MORROW, died on September 28 at his home in Metcalfe, Ontario. This highly regarded physician of the old school was in his 94th year and was born in Russell, Ont. where he attended public and grammar schools. For eight years he was a teacher in the district including Vars, Plantagenet and Navan and then entered McGill University where he graduated in Medicine in 1888. Dr. Morrow obtained his L.R.C.P. from Edinburgh University in 1893. He started his country practice at Vernon, Ont., between 1888 and 1890 and practiced at Metcalfe from 1890 to 1935. For thirty-five years he was medical health officer for Osgoode Township. Dr. Morrow was a member of the United Church in Metcalfe, member of Russell Lodge A.F. and A.M. and a member of the Independent Order of Foresters. He was a great reader of history and biography and took an active interest in the affairs of his community. Dr. Morrow is survived by his widow, one daughter and one son, Dr. C. E. L. Morrow of Metcalfe, Ontario.

DR. WILLIAM SAGER, aged 66, died suddenly September 23 in Vancouver. At the time of his death he was coroner for the Municipality of Surrey and carried on a general practice at White Rock and Crescent Beach.

He was born in Blackburn, Lancashire, in 1887, and came to Canada at the age of 22 to train as a medical missionary. He graduated from Queen's University with a B.A. and M.D. degree and was ordained by the Methodist Church in 1915. He served as a medical missionary in Hazelton, and after a short period as doctor at Surf Inlet Mines assumed charge of the United Church Hospital at Port Simpson.

In 1926 he entered private practice at Port Coquitlam, and in 1931 became medical health officer at Burnaby. He returned to private practice after the outbreak of World War Two, and during the past 11 years had lived at Crescent Beach. He is survived by his widow, four sons and two daughters.

DR. P. G. SHUMAN, died suddenly on September 26 in Massey, Ont., of coronary thrombosis. Dr. Shuman conducted a very busy practice, treating patients over a large area, and the Indian reserves, and served as medical

officer of health for Massey. In co-operation with the Canadian Legion and the Women's Institute, he held a regular Well Baby and Toxoid Clinic. As a member of the Lions Club, he consistently urged aid to those in poor circumstances. Specializing in children's ailments, he served in Toronto Sick Children's Hospital and in California, and had gained recognition as a chest specialist for which work he received an award at New York City last fall.

## ABSTRACTS from current literature

### MEDICINE

#### *The Use of Telepaque in Cholecystography.*

MILLER, C. F. AND CARRIER, J. W.: NEW ENGLAND J. MED., 248: 709, 1953.

Investigations by several groups of workers have shown that Telepaque is a better radio-opaque medium for cholecystography than others previously employed. It is superior to Priodax in three ways; it produces a denser shadow on the film, causes fewer side effects and is more convenient for the patient to take. One possible disadvantage is that Telepaque has a greater tendency to appear in the large bowel in the films and conceivably might cause confusing shadows interfering with interpretation. Such a disadvantage has not been shown to be of clinical significance.

The authors employed Priodax as their routine method for cholecystography. The drug was given by mouth and the dose increased in patients over 150 pounds. Telepaque was subsequently used if the gall bladder was not visualized. Of thirteen cases where the gall bladder was not seen following ingestion of Priodax six showed normal concentration after ingestion of Telepaque. In two other cases the superior density of Telepaque demonstrated stones which were not evident with the prior use of Priodax. The dosage of Telepaque does not have to be increased even with obese individuals.

NORMAN S. SKINNER

#### *Chronic Constipation in Children: With Particular Reference to Hirschsprung's Disease.*

BODIAN, M.: PRACTITIONER, 169: 517, 1952.

Most children who suffer from chronic constipation which is often associated with megacolon can now be submitted to a rational form of treatment with a reasonable hope of cure. Megacolon due to colonic inertia is not uncommonly seen, and may be present from birth. There is a gradual increase in severity, and marked constipation dates only from several months or years of age. The motions become large and dry and defaecation becomes painful; the child holds back and thus aggravates the condition. This leads to distension of the rectum and then the sigmoid colon; proximal to this there is a moderate gaseous distension causing enlargement of the abdomen. The increasing faecal distension of the rectum and sigmoid may be masked by overflow "incontinence" or diarrhoea. The child is healthy in appearance, although the abdomen may be distended and large faecal masses may be palpated. The perianal region is often stained with faeces, the anal canal is short and the rectum is full of faeces, and there may be anal fissures. On x-ray examination there are the "terminal reservoir" and "tubular distension" appearances of colonic inertia. The treatment is daily bowel washouts for 3 days, then bowel washouts thrice weekly for 3 weeks, bowel washouts twice weekly for 2 weeks, and finally once a week for 4 to 6 weeks. This should induce the return of normal bowel habits.

Hirschsprung's disease is not present at birth, but develops at a few weeks or months of age. Boys are affected 9 times as frequently as girls. The stools are thin and pasty or firm resembling pellets; there is considerable gaseous distension of the abdomen, which in time leads to flaring of the ribs, flattening of the diaphragm, eversion and apparent downward migration of the umbilicus. The rectum is empty and there is no overflow incontinence of faeces. Borborygmi are heard and peristaltic waves may be seen crossing the abdominal wall. The disease runs a chronic course of partial intestinal obstruction, with superimposed acute crises which may be dangerous to life due to the sudden pouring of fluid into the obstructed loops of bowel with dehydration and loss of electrolytes. X-ray examination reveals the characteristic terminal normal or narrowed segment of bowel distal to the megacolon. The distended portion of bowel is aganglionic and thus atonic. Surgical removal of the aganglionic distended bowel will cure the condition. Medical treatment, so far, has not been at all satisfactory.

J. A. STEWART DORRANCE

*Total Adrenalectomy for Reactivated Carcinoma of the Prostate.*

HARRISON, J. H., THORN, G. W. AND JENKINS, D.: NEW ENGLAND J. MED., 248: 86, 1953.

Over the past ten years ample proof has accumulated that orchiectomy and the administration of oestrogens exert inhibitory effects upon the growth of prostatic carcinoma. However, subsequent reactivation of the cancer growth consistently occurs. Because of the logical assumption that androgens stimulate the growth of prostatic cancer total adrenalectomy has come into use as a further means of limiting the patient's androgen production. Cortisone makes possible not only survival but also an active existence following total adrenalectomy.

The authors discuss the hormonal problems involved and report in detail seven cases of widespread metastatic carcinoma of the prostate who were rapidly deteriorating despite previous orchiectomy and continued oestrogen administration. Total bilateral adrenalectomy was carried out in these patients, followed by maintenance doses of cortisone. Markedly beneficial results were obtained in all but one case, relief of the pain of metastatic growth was noteworthy as was a generally improved state of well-being. Regression in size of metastatic lesions was also observed.

NORMAN S. SKINNER

*Antispirochaetal Interference Between Antibiotics and Arsenoxide.*

ERCOLI, N. AND CARMINATI, G. M.: SCIENCE, 116: 579, 1952.

The authors, of the Serafino Belfanti Serotherapy Institute of Milan, remark the recent discovery that BAL inhibits the antispirochaetal activity of penicillin, bacitracin and chloromycetin, as it does that of the arsenical and gold compounds. This action is specific to antiprotozoal action, not affecting antibacterial action, and seems to be related to the chemoreceptor mechanism. From this premise the authors have studied antispirochaetal behaviour of combinations of various antibiotics and metal-containing compounds. They report from their experiments that antispirochaetal activity of arsenoxide or myochrysin was additively or synergistically enhanced by combining them in treatment with streptomycin, penicillin or bacitracin. This activity was on the other hand decreased when terramycin, aureomycin or chloromycetin were combined with it in therapy. Of the three antibiotics interfering with arsenoxide, only chloromycetin is inhibited by BAL in regard to its antispirochaetal effectiveness. It was found that the interference phenomenon appeared as a decrease of activity of both drugs—antibiotic and metal—used in combined treatment.

From this the authors have derived a working hypothesis that therapeutic interference is the result of a

reciprocal competition between drugs in an elective process of fixation-penetration on or in the micro-organism. The detailed description of the application of this hypothesis in the laboratory is worth reading, and the whole paper is not without clinical significance. The therapeutic combination of metals and antibiotics in practice often appears to be as haphazard as the selection of antibiotics used alone.

D. E. H. CLEVELAND

*Hazards in the Treatment of Cardiac Decompensation.*

ALTSCHULE, M. D.: NEW ENGLAND J. MED., 248: 493, 1953.

An aspect of the treatment of congestive heart failure that deserves repeated emphasis is the harm that may be caused by therapy injudiciously or erroneously applied. The many unusual effects of digitalis overdosage are not sufficiently appreciated (diarrhoea, visual disturbances, auricular fibrillation and marked cardiac slowing with precipitation of Stokes-Adams attacks). It is also often forgotten that some patients become digitalized gradually unless cautious redigitalization is carried out three or four times a year.

Bedrest must neither be minimized nor over-used. It is probably not bedrest itself which gives rise to dreaded complications, such as venous thrombosis and embolism, but rather a state of stupor with lack of muscular movement resulting from sedation. Morphine is of great value in many patients but it must be remembered that it has a marked hypotensive effect and syncope and even death may follow its administration if patients are tilted upright with feet dependent. Morphine also inhibits mercurial diuresis and there is little point in giving mercurial injections to patients under the influence of the drug.

Oxygen in high concentration may favour atelectasis because of its effect in washing out the nitrogen from the alveoli. Oxygen therapy is especially dangerous in cor pulmonale where the respiratory centre has developed a relative immunity to hypercarbia and the relief of anoxia following oxygen administration may cause fatal respiratory depression.

Aminophylline, on intravenous administration, may cause a dangerous peripheral vasodilatation and precipitate collapse. Mercurial diuretics and low sodium diets may give rise to the low sodium syndrome and salt should not be restricted to extreme degree in patients who require frequent mercurial diuresis. Acidosis must be watched for with the use of ammonium chloride, especially in the presence of renal insufficiency. The dangers of anticoagulant therapy are increased in liver disease. It must be borne in mind that, except for digitalis, all therapy for cardiac decompensation is symptomatic and does not improve cardiac function and harmful effects must be carefully watched for and avoided.

NORMAN S. SKINNER

*The Use of Rauwolfia Serpentina in Hypertensive Patients.*

WILKINS, R. W. AND JUDSON, W. E.: NEW ENGLAND J. MED., 248: 48, 1953.

Rauwolfia serpentina (*Ophioxylon serpentinum*) has been used in India for many years for a variety of diseases perhaps because it possesses a sedative action. One of the diseases in which it was considered to exert a beneficial action was hypertension. The authors review the literature on the drug and report their impressions gained in its clinical use, especially their results in a group of 59 hypertensives who were treated with the drug, alone and in combination with other medication, and with control studies achieved by placebos and by examination of patients by physicians who were not aware whether the patient was taking drug or placebo.

It is concluded that Rauwolfia serpentina exerts moderate hypotensive effects and also brings about

symptomatic improvement in patients with hypertension. It is also of value in combination with hydrazinophthalazine and with Veratrum viride where it produces a striking additive, if not synergistic, effect in lowering blood pressure. The drug is well tolerated for months, produces no serious side effects, although it may cause bradycardia, nasal congestion, sedation and weight gain. In the opinion of the authors it represents a distinct addition to the pharmaceutical armamentarium against hypertension and should be carefully studied.

NORMAN S. SKINNER

#### *Ewing's Sarcoma.*

WANG, C. C. AND SCHULZ, M. D.: NEW ENGLAND J. MED., 248, 571, 1953.

Fifty cases of Ewing's sarcoma treated at the Massachusetts General Hospital over the period 1930-1952 were reviewed and seven showed a survival period of over five years (six after radiation therapy, one after radical surgery). Five of these seven were apparently cured; two ultimately died of the disease.

Ewing's tumour of bone is a highly radiosensitive lesion. It pursues a variable course, progress of the disease being much slower in some cases than in others. Irradiation is the treatment of choice and not only gives relief from discomfort but also an often unexpectedly long and useful life.

NORMAN S. SKINNER

#### *Mitral Stenosis with Long-Lasting Congestive Heart Failure or Auricular Fibrillation.*

LOVE, D. E. AND LEVINE, S. A.: NEW ENGLAND J. MED., 247: 917, 1952.

The development of congestive failure or of auricular fibrillation with mitral stenosis has generally been considered to indicate a survival period averaging only three to five years. To assess this opinion the authors studied the records of all patients dying with mitral stenosis at the Peter Bent Brigham Hospital from 1913 to 1946 (510 cases) and of all patients seen at the out-patient department during the period of 1940 to 1942 with the same diagnosis on whom there were adequate follow-up data.

As a result of the above survey the authors conclude that the prognosis in mitral stenosis after the development of congestive failure or of permanent auricular fibrillation has improved of late years and that 13% will survive nine or more years. The presence of tricuspid stenosis or of hypertension appears to improve the prognosis. These facts deserve consideration in the evaluation of the indications for, or the results of, valvuloplasty.

NORMAN S. SKINNER

### SURGERY

#### *Tryptic Debridement of Clotted Hæmothorax.*

McCROSKEY, C. E. AND HARDIN, C. A.: ARCH. SURG., 66: 650, 1953.

Clotted hæmothorax in the dog and in man may be absorbed or organized into a fibrous hæmothorax. Tryptin solution (250 mgm. in 50 c.c.) was found to effectively liquefy clots in the pleural cavity. The resulting pain may be controlled by pontocaine.

BURNS PLEWES

#### *Primary Repair of Major Arterial Injuries.*

JAHNKE, E. J. AND HOWARD, J. M.: ARCH. SURG., 66: 646, 1953.

A Surgical Research Team of Korea reports 58 battle casualties in which major arteries had been damaged. The average time lag from wounding was 8.3 hours (3 to 48 hours) and the percentage of amputation was

10.3. End-to-end suture anastomosis or autogenous vein graft was the primary treatment. Arterial spasm of the proximal segment was overcome by the application of 2.5% papaverine hydrochloride locally for 15 to 20 minutes. The wounds were not closed after debridement till later. Penicillin was used routinely. The causes of their new failure are discussed. Anticoagulant therapy was not used.

BURNS PLEWES

#### *Thrombosis of the Aortic Bifurcation Treated by Resection and Homograft Replacement.*

ODOT, J. AND BEACONSFIELD, P.: ARCH. SURG., 66: 365, 1953.

When thrombosis of the aorta has led to gangrene or ulceration of the feet, sympathectomies are unlikely to prevent above knee amputations. If calcification of the femoral arteries and aorta is not advanced, a graft can be successfully placed and ulcers will heal. During the past two years five patients have undergone resection and replacement of the aortic bifurcation. All were improved: skin temperatures increased, arterial pulsation returned, and amputation avoided. It is too soon to assess long-term results. The homografts must be preserved very carefully at low temperatures.

BURNS PLEWES

### OBSTETRICS AND GYNÆCOLOGY

#### *The Histogenesis of Endometriosis.*

GARDNER, G. H., GREENE, R. R. AND RANNEY, B.: OBST. AND GYNÆC., 1: 615.

No single theory of histogenesis necessarily accounts for all cases of endometriosis, even though all instances of spontaneously-occurring endometriosis in every known location can be explained by the celomic metaplasia theory.

The factors which may stimulate the development of endometriosis are manifold; all are extremely difficult to prove. The opportunities for further study in this field are unlimited. Even though there is already a vast quantity of information available, most of it is replete with theoretical implications rather than with factual data which have a direct bearing on histogenesis.

ROSS MITCHELL

### PÆDIATRICS

#### *Acrodynia and Mercury.*

WARKANY, J. AND HUBBARD, D. M.: J. PEDIAT., 42: 365, 1953.

In a series of 28 acrodynic children it was shown that all had been exposed to mercury. This would tend to support the hypothesis that acrodynia is an effect of exposure to mercury. Calomel is the most frequent source of mercury in acrodynia, while ammoniated mercury ointment is a very common source of mercury, some of which may be inadvertently ingested. In the majority of cases recently reported mercury was demonstrable in the urine when searched for by proper methods. Determination of mercury in the urine is of particular value in acrodynia, when a history of exposure cannot be elicited. The urinary elimination of mercury is capricious and may vary from day to day, or from hour to hour, and mercury may be detected in the urine up to 9 months after exposure to mercury ceased. The administration of sodium hyposulphate causes the urine to become free of mercury. The variability of mercury elimination is in no way characteristic in acrodynia alone. Mercury may be excreted by healthy children over long periods of time and in large quantities. The symptoms of acrodynia and mercurialism are similar—irritability, anorexia, loss of weight, polymorphic rashes, looseness

and loss of healthy teeth, combined with "shedding" of the alveolar processes, swelling of the gums, and profuse salivation. Treatment is to remove the source of mercury and to give BAL (dimercaprol).

It is now generally agreed that acrodynia is due to mercurialism, and it is a sign of mercury poisoning.

J. A. STEWART DORRANCE

*The Psychologic Evaluation of Children with Cerebral Palsy and its Implication in Treatment.*

MILLER, E. AND ROSENFELD, G. B.: J. PEDIAT., 41: 613, 1952.

The intelligence distribution of 330 children with cerebral palsy studied over a five-year period was obtained. One-half of the children were mentally defective (I.Q. under 70) and three-quarters of them were below average intelligence (I.Q. below 90). There was no relationship between the type of cerebral palsy and intelligence distribution. Of the 330 children, 56% were under 4 years of age when first seen at the clinic. Of these, 53% were mentally defective (I.Q. under 70), of whom 61% were low grade defective (I.Q. below 40). Two specific disabilities, distractibility and visuomotor disturbances were studied. Forty-four per cent of the spastics and 40% of the athetoids were very distractible. However, only 8% of the athetoids, in contrast to 39% of the spastics showed visuomotor disturbances. Implications of these findings are discussed. By fitting the treatment to the psychologic as well as the neuromuscular status of the individual child, aims of treatment would be more frequently fulfilled, and the tremendous potential and parental emotional turmoil which unsuccessful and perhaps unindicated treatment engenders will be avoided.

J. A. STEWART DORRANCE

*Drugs Used in Pædiatric Allergy.*

SIEGAL, S. C.: POST-GRAD. MED., 12: 563, 1952.

During the past 2 or 3 years ACTH and cortisone are the only new drugs that have been added to the armamentarium of the physician to treat allergic disorders. Children tolerate relatively larger doses than do adults; one may commence with a dose of 100 mgm. orally or parenterally and continue until the symptoms have subsided. Then the dose may be tapered off to a maintenance dose of 25 to 50 mgm. Antihistaminics are very useful drugs, particularly Phenergan, with its long action, in a dose of 12.5 to 25 mgm. If one antihistaminic fails another of different chemical formula may be given. Overdosage must be carefully watched for in children. Epinephrine and ephedrine are the best drugs for rapid symptomatic relief. Adrenalin, 1/5,000 in oil given intramuscularly, has been used and is still a very reliable drug. There are newer sympathomimetic drugs, some of which are very rapid acting as well as having prolonged action. Xanthines rank high in the treatment of asthma, particularly aminophylline. Infants may be given a suppository containing 0.125 gm. every 6 hours. Older children often tolerate 0.25 gm. Expectorants are still important in allergy. Potassium iodide may be given in the form of enteric-coated tablets or in a saturated solution—10 drops three times daily. Syrup of hydriodic acid mixed with cherry base is appealing to children. Ammonium chloride or syrup of ipecac may also be given.

Pyromen administered in doses of 1 to 5 mcgm. subcutaneously is reported as being therapeutically effective in asthma, hay fever, atopic dermatitis, urticaria, gastrointestinal allergy, and fatigue syndrome of allergic origin. Further clinical studies are necessary.

J. A. STEWART DORRANCE

*Vascular Complications of Juvenile Diabetes.*

GUILD, H. G. et al.: J. PEDIAT., 41: 722, 1952.

Vascular complications of diabetes are frequently seen in juvenile diabetics. Usually those complications which can be detected in the retina are found relatively early. The incidence of vascular complications increases with the duration of the diabetes mellitus; the time of appear-

ance, the severity of the lesions, and the rapidity of progression are in direct relationship to the degree of diabetic control. Lesions may be seen 10 years after the onset of the diabetes mellitus with fair or poor control, in these patients lesions are almost inevitable by 15 years. Patients with consistent good control may be free of lesions for as long as 18 years and the early lesions are minimal changes of doubtful significance. In this group of patients the progress of the complications is slow. The earlier in childhood that the diabetes mellitus begins, the better is the eventual control as the child grows up with his diabetes. Accustomed to parental guidance during the early years they adjust more easily to the few limitations imposed by diabetes and soon remember no other way of life. All diabetics should strive for as good control as possible. Careful supervision depends on regularity of visits to the clinic or family doctor, particularly until puberty has been completed.

J. A. STEWART DORRANCE

ANÆSTHESIA

*N-Allylnormorphine: an Antagonist to Neonatal Narcosis Produced by Sedation of the Parturient.*

ECKENHOFF, J. E., HOFFMAN, G. L. JR. AND FUNDERBURG, L. W.: AM. J. OBST. AND GYNEC., 65: 6: 1269, June 1953.

The incidence of neonatal depression is greater if analgesics and sedatives are administered to the mother prior to delivery. Various agents have been proposed for the prevention or treatment of infant depression caused by narcotics, but none has proved completely satisfactory. Recently it has been demonstrated in man that n-allylnormorphine safely and effectively antagonizes respiratory and circulatory depression caused by opiates and this suggested its possible value in the prevention of neonatal depression.

Data were collected from 1,100 patients; the usual analgesics and sedatives included meperidine, 100 mgm., Seconal, 200 mgm., and scopolamine, 0.4 mgm. The highest total dose of meperidine was 375 mgm. during a 7½ hour period. Barbiturates were rarely repeated. Approximately one-half of the patients were given a solution containing 10 mgm. n-allylnormorphine in 2 c.c. of normal saline intravenously. The remainder, serving as controls, received 2 c.c. of normal saline.

The most commonly used anæsthetic was nitrous oxide with never less than 20% oxygen. As weak a concentration of nitrous oxide as was compatible with satisfactory delivery conditions was employed. If adequate anæsthesia could not be obtained with nitrous oxide, ether was added. A smaller number of patients were given caudal or spinal anæsthesia or regional nerve block. A physician anæsthetist, in attendance at each delivery, recorded the time of the delivery of the infant's chin and the seconds were counted until the first gasp of the infant, and then until respiration or cry was established. The state of the infant's muscle tone and of oxygenation were noted. Data were also recorded about the need for infant resuscitation, the development of secondary respiratory depression, and the maintenance of sustained crying.

Among the 532 mothers who received n-allylnormorphine prior to delivery there were four prenatal deaths (0.75%) and among the 570 control cases who received normal saline, there were three deaths (0.53%). Detailed studies of each fatality cast no suspicion on n-allylnormorphine as a factor contributing to death.

In addition to the above series of patients, 12 infants were given n-allylnormorphine directly into the umbilical cord vein. These were infants who failed to breathe for 5 to 10 minutes after delivery, and who were believed to be apnœic because of maternal opiate sedation. 0.1 or 0.2 mgm. n-allylnormorphine in 2 c.c. of normal saline were injected into the umbilical cord vein.

In contrast to the depressant effect of n-allylnormorphine in normal man, it did not cause any demon-

strable depression in the new born infants. This observation, however, was not considered final because of the relatively small number of patients in this series. When nitrous oxide was given for delivery, it was found that n-allylnormorphine may cause a minor degree of depression in the infant. Despite the possible existence of a mildly depressant action on un-narcotized newborn infants, n-allylnormorphine definitely counteracted infant narcosis due solely to opiates used for maternal sedation, and contributed to notably shorter periods from birth to gasp and from birth to establishment of respiration or cry.

There were no demonstrable maternal complications, though several patients not given opiates experienced a cortical depressant effect manifested by hallucinations, crying, and complaints of muscular weakness. There was no evidence that the drug retarded labour, adversely affected uterine tone, delayed delivery of the placenta, or increased blood loss.

B. L. FRANK

## THERAPEUTICS

### *Therapeutic Considerations and Controversial Issues in the Modern Management of Acute Myocardial Infarction.*

RUSSEK, H. I.: AM. J. M. SC., 225: 589, 1953.

Adequate care for the patient suffering from acute coronary occlusion is one of the most urgent problems in present day therapeutics. Until several years ago therapy consisted of little more than the use of morphine and prolonged bed rest.

Recently it has become a universal practice to give oxygen to cases of acute myocardial infarction because this agent is reputed to relieve pain, restlessness, dyspnoea and to reduce the size of the resultant infarct. Improvement in therapy has also been sought in the use of drugs which are thought to dilate the coronary arteries and increase the supply of oxygen to the myocardium. Among the commonest of these are the xanthines, the nitrites, alcohol and papaverine. Anticoagulants are now widely employed as standard procedure in the treatment of acute myocardial infarction. The need for careful clinical and laboratory control when these drugs are administered has also made hospitalization a routine requirement. To combat shock, Paredrine, Neosynephrine, mephentermine and other pressor agents are undergoing trial in an attempt to increase blood pressure without accelerating the heart rate. Small transfusions of blood or plasma and intra-arterial transfusions have also been employed in an effort to influence favourably the shock syndrome.

The author evaluates critically some of these specific measures, analyzes the indications for their use and points up the dangers of overtreatment, emphasizing the fallacy in preventive therapy which disregards the fundamental requirement of adequate rest for the heart. He comes to the conclusion that some 40% of all cases of acute myocardial infarction require little more than sedation for pain and medical guidance as to the duration and degree and restriction of activities. In the remaining cases careful evaluation of the signs and symptoms in the individual patient should dictate the specific measures most likely to influence favourably the natural course of the disease.

B. L. FRANK

### *Penicillin Anaphylaxis, Nonfatal and Fatal Reactions.*

FEINBERG, S. M., FEINBERG, A. R. AND MORAN, C. F.: J. A. M. A., 152: 2: 114, May 9, 1953.

In this paper anaphylactic and sometimes fatal reactions from penicillin are described; they occur immediately after the administration of penicillin and consist of an acute allergic (atopic) reaction, manifested by any or a combination of the following symptoms: urticaria, angioneurotic oedema, asthma, emphysema, laboured breathing, shock (with profound fall of blood pressure), cyanosis, and unconsciousness. There is evidence that, in per-

sons in whom the reaction is of this type, a true atopic or anaphylactic sensitivity has developed as a result of repeated administration of penicillin, that circulating antibodies to this drug have been produced, and that there is the capacity to give an immediate whealing skin reaction to scratch or intradermal tests. Such anaphylactic reactions are profound, dangerous, and even fatal.

Such untoward reactions are on the increase, probably because an increasing segment of the population has had the opportunity of becoming sensitized to penicillin. Isolated case reports do not represent the true incidence of fatal reactions. A number of deaths from penicillin have not been recorded in the medical literature. The cases reported in this paper represent only a small fraction of the immediate severe reactions and anaphylactic deaths which have occurred following the administration of penicillin.

The route of administration of penicillin in the fatal cases reported in this paper and elsewhere was largely intramuscular. Severe and nearly fatal reactions have been described from intranasal instillation, aerosol, and oral administration. There is no reason to believe that penicillin administered by any of the latter routes cannot be fatal. The dose of penicillin may occasionally be a factor but any therapeutic dose in sensitive cases may be too much.

Penicillin should not be given for trivial conditions, and before the drug is administered the patient should be asked whether he is allergic to anything, whether he has used penicillin in the past, and whether he has had any unusual reactions to it. At the first sign of an immediate reaction to penicillin, 0.5 to 1 c.c. of epinephrine in a 1:1,000 dilution should be given intramuscularly. This should be followed in two or three minutes by a similar dose if no improvement follows. As soon as the epinephrine has been administered, it is wise to give 3.75 grains of aminophylline in 10 c.c. intravenously. If cyanosis is present, oxygen should be administered. If shock continues, plasma should be given intravenously.

B. L. FRANK

## INDUSTRIAL MEDICINE

### *Prevention of Skin Damage by Sunlight.*

BELL, C. D. AND MAZZONE, W. F.: U.S. ARMED FORCES M. J., 3: 1225, 1952.

After reviewing available literature the authors present in detail the damage to the skin (heliodermatosis and skin cancer) produced by repeated overexposure to sunlight, the mechanism by which the noxious effects are inflicted, and a practical method of prevention. Naval personnel are particularly vulnerable because of their occupational exposure. It is pointed out that heliodermatosis is found only in skin that has been subjected to habitual sunburn; sunlight can be strongly incriminated too in the production of skin cancer. The usual sequence of events is heliodermatosis of varying degree, keratosis senilis, leukoplakia of the lower lip, and, finally, epithelioma of the skin and lip.

The predisposing factors for sunlight are racial stock and eye colour. Because of a lack of physiologic protection, the most susceptible persons are those of Scotch-Irish-English ancestry, North Europeans, and, perhaps, all homozygous blue-eyed persons. The actinic band of sunlight, around 3,000 angstroms, is responsible for the permanent changes induced in the skin; protection therefore lies in screening out this band of the sunlight spectrum. The sodium salt of para-aminobenzoic acid (NaPABA) has proven extremely effective for this purpose, the protection given being superior to that provided by other agents. Following tests using the therapeutic lamp and employing different percentages of NaPABA in different combinations of alcohol and water, preparations to be applied prior to exposure, have been recommended for both men and women. This material is readily available to navy personnel and is easily incorporated in standard pharmaceutical preparations.

MARGARET H. WILTON

## FORTHCOMING MEETINGS

### CANADA

CANADIAN ASSOCIATION OF RADIOLOGISTS, Annual Meeting, Château Frontenac, Quebec, Que. (Dr. Jules Gosselin, Secretary, 444 Chemin Ste. Foy, Quebec, Que.) January 13-15, 1954.

ONTARIO MEDICAL ASSOCIATION, Annual Meeting, Royal York Hotel, Toronto, Ont. (Dr. Glenn Sawyer, 244 St. George Street, Toronto 5, Ont.) May 10-14, 1954.

INTERNATIONAL CONGRESS OF PSYCHOLOGY, Montreal, Que. (Prof. H. S. Langfeld, International Union of Scientific Psychology, Eno Hall, Princeton University, Princeton, N.J.) June 7-12, 1954.

SOCIETY OF OBSTETRICIANS AND GYNÆCOLOGISTS OF CANADA, Annual Meeting, Harrison Hot Springs Hotel, Harrison Hot Springs, B.C. (Dr. R. B. Meiklejohn, Secretary, Suite 334, Toronto Western Hospital, Toronto, Ont.) June 10-13, 1954.

CANADIAN MEDICAL ASSOCIATION, Annual Meeting, Vancouver, B.C. (Dr. T. C. Routley, General-Secretary, 244 St. George Street, Toronto 5, Ont.) June 14-18, 1954. [Incorrectly shown in November issue.]

INTERNATIONAL CONFERENCE ON GROUP PSYCHOTHERAPY, Toronto, Ont. (Dr. Wilfred C. Hulse, Chairman, International Committee on Group Psychotherapy, 110 West 96th Street, New York 25, N.Y.) August 12-19, 1954.

INTERNATIONAL CONGRESS ON CHILD PSYCHIATRY, University of Toronto, Toronto, Ont. (Miss Helen Speyer, Executive Officer, International Association for Child Psychiatry, 1790 Broadway, New York 19, N.Y.) August 13-14, 1954.

INTERNATIONAL CONGRESS ON MENTAL HEALTH, Fifth Congress, University of Toronto, Toronto, Ont. (The Executive Officer, Fifth International Congress on Mental Health, 111 St. George Street, Toronto, Ont.) August 14-21, 1954.

### UNITED STATES

AMERICAN MEDICAL ASSOCIATION, Clinical Session, St. Louis, Mo. (Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Ill.) December 1-4, 1953.

RADIOLOGICAL SOCIETY OF NORTH AMERICA, 39th Annual Meeting, Palmer House, Chicago, Ill. (Dr. Donald S. Childs, 713 E. Genesee Street, Syracuse 2, N.Y.) December 13-18, 1953.

CONFERENCE OF CATHOLIC SCHOOLS OF NURSING, 7th Annual Meeting, Atlantic City, N.J. (Executive Office, 1438 South Grand Blvd., St. Louis 4, Mo.) May 15-16, 1954.

CATHOLIC HOSPITAL ASSOCIATION, 39th Annual Convention, Atlantic City, N.J. (Executive Office, 1438 South Grand Blvd., St. Louis 4, Mo.) May 17-20, 1954.

AMERICAN TRUDEAU SOCIETY, Medical Section of the National Tuberculosis Association, Annual Meeting, Atlantic City, N.J. (Chairman of the Medical Sessions Committee, American Trudeau Society, 1790 Broadway, New York 19, N.Y.) May 17-21, 1954.

AMERICAN UROLOGICAL ASSOCIATION, Annual Meeting, Waldorf-Astoria Hotel, New York, N.Y. (Dr. William P. Didusch, Executive Secretary, 1120 N. Charles Street, Baltimore 1, Md.) May 31-June 3, 1954.

AMERICAN COLLEGE OF CHEST PHYSICIANS, 20th Annual Meeting, San Francisco, Calif. (Dr. Edgar Mayer, Chairman of the Committee on Scientific Program, 850 Fifth Avenue, New York 21, N.Y.) June 17-20, 1954.

AMERICAN MEDICAL ASSOCIATION, Annual Meeting, San Francisco, Calif. (Dr. George F. Lull, 535 North Dearborn Street, Chicago 10, Ill.) June 21-25, 1954.

### OTHER COUNTRIES

INTERNATIONAL CONGRESS OF INTERNATIONAL COLLEGE OF SURGEONS, Sao Paulo, Brazil. (Dr. Max Thorek, Secretary-General, 1516 Lake Shore Drive, Chicago, Ill.) April 26-May 2, 1954.

INTERNATIONAL CONGRESS ON THROMBOSIS AND EMBOLISM, Basle, Switzerland. (Dr. W. Merz, Hon. Secretary, Chief Medical Officer, Gynæcological Clinic, University of Basle, Switzerland) July 15-19, 1954.

INTERNATIONAL GERONTOLOGICAL CONGRESS, London and Oxford, England. (Prof. R. E. Tunbridge, President, General Infirmary, Department of Medicine, The University, Leeds, England) July 12-22, 1954.

INTERNATIONAL CONGRESS FOR PSYCHOTHERAPY, Zürich, Switzerland (Dr. H. K. Fierz, Secretary General, Theaterstrasse 12, Zürich 1, Switzerland) July 21-24, 1954.

INTERNATIONAL CANCER CONGRESS, Sao Paulo, Brazil. (Prof. A. Prudente, 171 rua Benjamin Constante, Sao Paulo, Brazil) July 23-29, 1954.

INTERNATIONAL CONGRESS ON OBSTETRICS AND GYNÆCOLOGY, Geneva, Switzerland. (Dr. H. de Watteville, President, Maternité Hôpital, Cantonal, Geneva, Switzerland) July 26-31, 1954.

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(Continued from page 635)

In 23 patients the gastrics were negative, but the bronchial lavages turned out positive. In 5 of these cases this was true on bronchial smear versus gastric culture and confirmed by bronchial culture. In only 4 cases was the reverse true, i.e. the bronchial lavage was negative but the gastric positive, and in only one of the cases was the result established on smear of the gastric contents when the bronchial culture was negative.

These results were established on patients who were progressing favourably under treatment and in whom the question of discharge from hospital would soon have come up. One may question whether these patients should be discharged or not. This has been considered by many institutions and opinions are varied. It seems to us that as long as tubercle bacilli can be found in the bronchi the patient is a potential danger to himself and others and deserving of further medical care.

### CONCLUSION

Bronchial lavage is a quick, convenient and relatively easy procedure. It is effective in finding tubercle bacilli and in our hands has been a more sensitive test than gastric lavage.

### REFERENCES

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2. *Idem*: *Quart. Bull. Sea View Hosp.*, 8: 212, 1946.

## NEWS ITEMS

## ALBERTA

Dr. S. M. Schmaltz, President, together with Dr. G. S. Gray, Dr. D. N. MacCharles and Dr. Wm. Bramley-Moore travelled to Grand Prairie recently. The District Medical Society meeting was well attended. Dr. Harvey Fisk of McLennan was chairman.

Dr. G. E. Learmonth of Calgary has now practised the art of medicine for fifty years. We wish to congratulate him for his good works, many of which will live after him.

Dr. Peter Melling, following a successful practice at Cadomin, has taken up practice in Edmonton.

The provincial medical meeting was held in Edmonton this year. The attendance exceeded all past meetings. A lively interest was noted in the General Practitioners' section and a basis for a Dominion organization and College is well on the way.

The Dr. A. F. Anderson curling trophy is being competed for this year and many a medical man will work with his team-mates in an effort to win it. The donator, Dr. Anderson, was for many years in practice in Edmonton and in later years Superintendent of the Royal Alexandra Hospital.

W. CARLETON WHITESIDE

## BRITISH COLUMBIA

The new quarters of the Medical Services Association of B.C. (M.S.A.), on Broadway West, are now occupied. The building has been specially designed for the M.S.A., and is thoroughly modern and up to date. It is owned by the Association.

The Hycroft Medical Building, on 16th Ave. and Granville, is the latest medical building in Vancouver. It is a thoroughly modern reinforced concrete building, with drug store and cafeteria, and there is a four-level ramp garage in the basement. The building is air-conditioned, and specially designed to be as soundproof as possible. It will hold about fifty doctors.

The Kinsmen's Club which has already done so much in aid of rehabilitation of spastic and polio cases in Vancouver, has recently, through the B.C. Polio Club, of which it is a sponsor, made a donation of \$25,000 to the University of British Columbia's Medical School, as an endowment for establishment of a chair of neurological research. Dr. M. M. Weaver, Dean of Medicine, accepted the gift on behalf of the School.

At a special ceremony in St. Joseph's Hospital in Victoria, Dr. G. F. Amyot, deputy Minister of Health, dedicated a new hydrotherapy unit to the memory of the late Hon. E. C. Carson, former minister of Public Works in B.C. The unit is for the treatment of those who suffer from crippling diseases, and was built by funds raised by the Women's Auxiliary of the Victoria Branch of the Canadian Arthritis and Rheumatism Society. Mr. Carson was an ardent supporter of the Society and a member of the Board.

Dr. George Stevenson, F.R.S.C., of the Ontario Mental Hospital at London, Ontario, and well-known Canadian psychiatrist, has been appointed to head a narcotics treatment survey in B.C. The study is being financed by the federal and provincial governments, and will operate

under the broad direction of a committee set up by Dr. N. A. M. MacKenzie, president of the University of British Columbia. The work is expected to continue for at least two years, and as exhaustive research will be made into the possibility of treatment of addicts. Many noted names are on the committee, and heads of departments of psychology, pharmacology, public health and preventive medicine, sociology, internal medicine, economics, and other departments, are represented.

Burnaby General Hospital has appointed Miss C. McCullie, R.N. as Director of Nurses. She comes from Glasgow Royal Infirmary, and came to Canada twenty years ago. She has filled this position in Woodstock, Medicine Hat and Kenora.

The B.C. Hospital Insurance Scheme pursues its troubled way in British Columbia, and at the recent annual meeting of the B.C. Hospitals' Association held in Vancouver, the Minister of Health, Hon. Eric Martin, had a busy time explaining the actions of the Social Credit Government in this regard. It is a difficult act to administer since 100% collection of dues is possibly merely an ideal, rather than a practical possibility, but there are a great many people still who should, but do not, pay their dues. Mr. Martin assured the meeting that the government is contemplating establishing a hospital or hospitals for care of the chronically ill.

Miss Edith Pringle, R.N., Hospital Service Inspector presented a three-fold plan for the treatment and care of this type of illness, and stressed the need of rehabilitation.

Campbell River is undertaking the building of a new hospital with twice the capacity of the present one, which is badly over-crowded. Help is expected from both the federal and provincial governments.

A new method of determining the degree of impairment by alcohol, in the case of drivers of motor cars who are suspected of over-indulgence, has just come into use in Vancouver. This is the Harger breath-testing apparatus, known by the rather cacophonous name of the "drunkometer", which has been under study by police authorities here for some time. Its use has been authorized by the Police Commission. Dr. T. R. Harmon, City Pathologist, and City Analyst E. J. Fennell will control its use. The test is purely voluntary, and no suspected person can be made to use the machine unless he agrees to do so. Its value is expected to lie, not only in the proof of alcoholic impairment, but also in excluding this as a factor, in doubtful cases.

The chemist in charge of the American Cyanamid Company's gamma globulin production is completing arrangements with the Vancouver General and other hospitals to collect and deliver supplies of human placenta for the Lederle Laboratories Division of the Cyanamid Company, with a view to producing gamma globulin for use in polio. Mr. Clarke stated that it is expected that placental material available in Canadian hospitals will supply 350,000 c.c. of serum in the first year of operation.

J. H. MACDERMOT

## MANITOBA

Dr. J. N. Andrew who at 85 is Manitoba's oldest practising physician, has returned to his home in Minnedosa after an operation. He is said to have given in 1894 the first dose of diphtheria antitoxin, 1,000 units, in Canada. The antitoxin had been sent by the discoverer, von Behring, to the late Dr. A. H. Ferguson of Winnipeg and Chicago who had worked in Koch's laboratory beside von Behring and Kitasato.

Drs. K. R. Trueman, James Rennie and Dwight Parkinson have been made Fellows of the American College of Surgeons at the recent meeting in Chicago.

Professor Yas Kuno of the University of Nagoya, Japan, addressed a meeting on October 5 sponsored by the Faculty of Medicine on "The Physiology of Human Perspiration" on which he is an acknowledged authority.

Mr. C. F. W. Illingworth, Regius Professor of Surgery, University of Glasgow, was the guest speaker at the regular monthly meeting of the Winnipeg Medical Society on September 17. His subject was "Gastro-intestinal Haemorrhage" and in the ensuing discussion several of those present who had attended his classes at Glasgow paid tribute to his clarity of expression and soundness of teaching.

Eight new members were added to the Society at this meeting.

Although the peak of the poliomyelitis epidemic has passed, the nursing situation is still acute. In Greater Winnipeg the incidence of polio cases per 100,000 population was over 300 and a much higher percentage of cases required respirator treatment. A total of 181 have been in iron lungs and 92 patients are still in respirators at King George Municipal Hospital. The provincial government has purchased 73 respirators and other expensive equipment for a total of over \$150,000 since April, and has contributed certain hospitalization expenses that will total more than \$250,000 by the end of the year. To date over 5,000 contacts have been treated with gamma globulin.

Dr. Edward Johnson received recently at Little Rock, Arkansas, an award from the American Psychiatric Association for his work in the development of voluntary services for patients in Selkirk Mental Hospital, of which he is superintendent.

Dr. Athol R. Gordon, honorary president of the University of Manitoba Students' Union, has been named governor-general for the University's politics club's student parliament, November 26 to 28.

Dr. and Mrs. Herbert W. Wadge of Winnipeg celebrated their fiftieth wedding anniversary on October 21.

The Sisters of Misericordia Hospital gave a reception on October 21 in honour of Dr. and Mrs. O. C. Trainor and Dr. and Mrs. A. G. Meindl. The occasion was the 25th anniversary of the Trainor wedding and of his election as M.P. for Winnipeg South in the recent federal election, and of Dr. Meindl's jubilee in medicine. He graduated M.D. from McGill in 1903.

The Winnipeg Medical Society held a symposium on Poliomyelitis on October 23. Those taking part were Drs. J. D. Adamson, R. T. Ross, J. A. Hides and M. H. L. Desmarais. Twenty new members were received into the society.

ROSS MITCHELL

## NEW BRUNSWICK

The annual meeting of the N.B. Branch of the Defence Medical Association of Canada was held in Moncton. The following slate of officers was elected: Hon. President Lieut.-Col. G. B. Peat of Rothesay; President, Lieut.-Col. R. J. Brown of Moncton; Vice-president, Surgeon Captain C. M. Oake of St. Martins; Secretary-Treasurer Lieut. A. R. F. Adams of Moncton.

At the annual meeting of the N.B. Tuberculosis Association held in Fredericton on September 23, Dr. J. F. McInerney, Minister of Health, expressed his appre-

ciation of the work of the association. Dr. D. A. Thompson of Bathurst was the guest speaker and Dr. J. A. Melanson, Chief Medical Officer, and Dr. P. M. Knox, Superintendent of Moncton Hospital, were elected to the executive.

Dr. R. C. Eaton has been appointed Superintendent of the Provincial Hospital at Campbellton, which is expected to be open early in 1954.

Dr. C. H. Adair has been appointed Physician-in-Charge of the Mental Health Clinic at Fredericton.

Dr. W. J. Fisher of Saint John attended the meeting of the "Institute of Psychiatric Treatment" in Boston early in October.

Dr. F. H. George addressed the clinical staff of Lancaster D.V.A. Hospital at their October meeting on the subject "Diagnosis of Anaemia". Clinical cases were presented by Dr. S. Milrod, Dr. J. MacKimmie and Dr. G. W. A. Keddy.

Dr. J. A. Melanson, Chief Medical Officer of New Brunswick, was elected Vice-president of the Canadian Public Health Association at the annual meeting in Toronto.

Dr. Samuel Milrod of Saint John has received his fellowship in the American College of Surgeons.

Dr. H. Rosen was the special speaker at the first fall meeting of the Saint John Medical Society. His subject was "Spinal Injuries".

The Miramichi Medical Society met in Newcastle on October 14. This was the first of a series of business meetings planned for all branches of the N.B. Medical Society. Dr. F. L. Whitehead, Secretary of the Provincial body led discussions on business affairs of the C.M.A. and the N.B. Medical Society, also, the proposed College of General Practitioners was outlined and a free-for-all review of the medical fee structure was undertaken.

The Carleton-Victoria Medical Society met at Woodstock on September 13. Dr. Harold Rosen spoke on "Injuries of Head and Spine". At the same meeting a new slate of officers was elected: President, Dr. C. W. Depow; Secretary, Dr. Graham Kee; Representative to the N.B. Medical Executive, Dr. John Lockhart. The Carleton-Victoria Society will be hosts to the N.B. Medical at the 1954 annual meeting to be held at Saint Andrews, September 1 to 4.

A. S. KIRKLAND

## NOVA SCOTIA

The 1953-1954 calendar of Dalhousie University lists eight emeritus professors of the Medical Faculty. These are Dr. John Cameron, Dr. R. E. Mathers, Dr. A. E. Doull, Dr. H. K. MacDonald, Dr. Kenneth A. MacKenzie, Dr. G. H. Murphy, Dr. H. W. Schwartz and Dr. F. G. Mack. All of the above are in Halifax except Dr. John Cameron, Professor of Anatomy (1915-1930) who now resides at "Balmashamier", 63 Grove Road, Bournemouth, England.

Dr. Walter Anderson, native of Pictou, Acadia graduate 1930 and M.D.C.M. McGill 1935 visited Nova Scotia in October. Dr. Anderson has been practising in Kelowna, British Columbia for the past fifteen years. In the group associated with Dr. Anderson are three more recent Nova Scotians—Dr. James Rankin, Dal. '39, Dr. Walter O'Donnell, Dal. '45 and Dr. T. J. O'Neil, Dal. '50.

Dr. A. W. Warnock of San Pedro, California, making his first visit to Nova Scotia, visited the medical school and several of the Halifax hospitals.

Dr. H. G. Grant, Dean of the Medical Faculty, recently attended meetings of the Association of American Medical Colleges in Atlantic City and returned via Montreal where he was present at meetings of the Association of Canadian Medical Colleges.

Dr. J. E. Hiltz, Medical Superintendent of the Nova Scotia Sanatorium, Kentville, has been signally honoured by the St. John's Ambulance Society in being created a member of the Order of St. John with the rank of serving brother. The award was made in Ottawa by the Governor-General of Canada.

Dr. J. A. McCarter, Professor of Biochemistry, Dalhousie University, attended the meeting of the first Teaching Institute of the Association of American Medical Colleges held in Atlantic City October 19 to 23. This gathering was attended by 120 delegates from medical schools in the U.S.A., Canada, Porto Rica and the Philippines. This meeting's agenda discussed in particular biochemistry, pharmacology and physiology. Next year another group of basic sciences will feature the meeting.

Dr. Harold Warwick, Executive Director of the Canadian Cancer Society, was a recent visitor to Dalhousie Medical School and the Victoria General Hospital.

Among the recent visitors to Nova Scotia enjoying her beautiful fall weather were Dr. and Mrs. W. P. Turner of Chatham, Ontario. Dr. Turner was guest of Surg. Capt. F. G. W. McHattie, Command Medical Officer for the Royal Canadian Navy East Coast. Dr. McHattie and Dr. Turner were classmates, University of Toronto, class 1939.

C. M. HARLOW

## ONTARIO

The Donald C. Balfour Lecture was given at Toronto by C. F. W. Illingworth, C.B.E., F.R.C.S., Regius Professor of Surgery, University of Glasgow. His subject was Epidemiology of Peptic Ulcer.

The following appointments have been made in the Faculty of Medicine. Toronto: Dr. Jeanne M. Fisher, assistant professor, Biochemistry; Dr. D. I. MacKenzie, Dr. Hagar Hetherington, Dr. M. W. Johnston, Dr. M. A. Ogryzlo, Dr. J. L. Silversides, associates in Medicine; Dr. A. J. Rhodes, assistant professor in Paediatrics; Dr. C. L. Askanazy, associate in Pathology; Dr. F. C. Monkhouse, assistant professor in Physiology; Dr. A. T. Jousse, acting director in Physical and Occupational Therapy; Dr. N. C. Delarue, Dr. C. S. Day and Dr. W. T. Mustard, associates in Surgery.

Dr. R. F. Farquharson and Dr. R. E. Haist attended the Institute of Teaching in Physiology, Biochemistry and Pharmacology sponsored by the Association of American Medical Colleges at Atlantic City for two days in October. Dean J. A. MacFarlane attended the meetings of the Association of American Medical Colleges at the same place the following week.

Dr. Karl E. Hollis has retired from the post of superintendent of Sunnybrook Hospital and senior treatment medical officer for the Toronto district. He was appointed superintendent before actual construction of the hospital

began and had much to do with the planning and convenience of the 1,500 bed establishment. Since 1946 Sunnybrook has had 50,000 admissions and has served 200,000 out-patients.

Dr. Clement MacLeod, lately superintendent of Westminster Hospital, London succeeds Dr. Hollis.

Dr. Leonard Simpson, St. Mary's Hospital, London, England, addressed the Physiological Society, Toronto on Pituitary-Adrenal Adiposity.

The Toronto Diabetes Association was addressed by Dr. G. A. Wrenshall on Glucagon, he gave a review of recent information on its nature, action, site of origin and possible relationship to diabetes mellitus. This is the hyperglycaemic factor found in the alpha cells of the pancreas and in certain parts of the gastric mucosa. One-tenth of a microgram per kilogram may raise the blood sugar 30%.

Dr. C. M. Hincks, who founded the Canadian Mental Health Association in 1918, has been made a member of the Comité d'Honneur of the World Federation for Mental Health. Dr. Hincks is chairman of the organizing committee for the Fifth International Congress on Mental Health which will meet in Toronto in 1954.

Dr. J. Harry Ebbs has been appointed director of the School of Physical and Health Education, University of Toronto. He succeeds the late Dr. H. A. Gates. Dr. Ebbs will remain as staff physician at the Hospital for Sick Children, where he will continue his present appointments and consulting practice. He will also carry on his work as assistant professor of paediatrics at the university.

A Mental Health Clinic Workshop sponsored by the Ontario Department of Health and the Canadian Mental Health Association was held for three days at the Ontario Hospital, Toronto. Its object was to bring together psychiatrists, psychologists and social workers who are working in community mental health clinics and child guidance clinics in Ontario to discuss under competent leadership professional problems as they have been discovered in the field.

Dr. Mabel Ross, mental health consultant, department of health, New York spoke on Therapeutic Techniques with Children when she discussed play therapy and other approaches to disturbed children. She also spoke on Research Possibilities of the Community Clinic.

Dr. Frederick H. Allen, director, Child Guidance Clinic, Philadelphia spoke on Some Theoretical Concepts of Child Development of Importance in Clinical Work, and The Place of the Mental Health Clinic in the community.

Other speakers were Dr. Angus Hood, director, Toronto Mental Health Clinic; Mr. Morton Teicher, chief social worker, Toronto Psychiatric Hospital; Mr. Gordon Elliott, Psychologist, Hospital for Sick Children; Dr. E. J. Rosen, staff psychiatrist, out-patient department, Toronto Psychiatric Hospital and Dr. T. P. Dixon, director, psychiatric clinic, General Hospital, Sudbury.

Dr. A. B. Stokes, professor of psychiatry, Toronto spoke on Problems in Organization, Administration and Training.

An initial contribution of \$25,000, made by the Dominion Stores, Limited, has begun an effort to endow the Department of Gynaecology and Obstetrics, Toronto. These funds will be used for research and teaching in the department under the direction of Professor D. E. Cannell.

Windsor is the largest city in Ontario with no maternal deaths in 1951. There were 3,158 live births.

LILLIAN A. CHASE

## PRINCE EDWARD ISLAND

The Annual Meeting of the P.E.I. Medical Society was held at Prince of Wales College on August 31 and September 1 past.

Dr. H. Shaw was re-elected president for another year.

Dr. G. Lea, registrar, reported eighty-three doctors registered. This is the largest number on record in this Province.

Dr. C. W. Burns, the President and Dr. A. D. Kelly, the deputy-secretary attended.

Papers were presented by Dr. Thorlaksón of Winnipeg, Dr. Halpenny of Montreal and Dr. James MacLean of St. John.

Dr. Gass of Sackville addressed the society concerning the organization of general practitioners.

On Monday night Dr. Shaw entertained all members with a square dancing party followed by a barbecued steak dinner.

The meeting ended with the annual Medical Ball at Dalvay-by-the-Sea.

J. H. MALONEY

## QUEBEC

### OPENING OF THE ALLAN MEMORIAL INSTITUTE WING

The new wing of the Allan Memorial Institute of Psychiatry was formally opened on October 21, by Mr. Blair Gordon, President of the Royal Victoria Hospital. A large and representative body of friends and supporters were present, including Mr. Paul Martin, the Minister of Health and Welfare, Mr. Gregoire, Deputy Minister of Health for the Department of Health, Quebec, and His Worship Mayor Houde, with many distinguished guests.

Congratulatory speeches were made and Mr. Gordon gave a clear and attractive account of the development of the Institute. Mayor Houde in his inimitable and irresistible manner spoke of the part that the Institute was playing in the life of the city. He was not sure, he added, but what as Mayor he would often welcome psychiatric guidance in some of his municipal problems.

Dr. Ewen Cameron, Director, spoke at length of the work and plans of the Institute: he felt that since the Institute was one of the pioneer divisions of a general hospital, the Royal Victoria Hospital and the Province of Quebec may justly claim to have led the vanguard in this sweeping shift in the care of the mentally sick. The Allan Memorial Institute of Psychiatry was first opened in 1944: it is so named after the Allan family whose house and property, donated to the Royal Victoria Hospital in 1940, was used for this purpose. It is an enterprise jointly undertaken by the Department of Psychiatry of the Royal Victoria Hospital in its clinical aspects and McGill University in research and teaching. Provincial Government grants have been matched by a Rockefeller grant to the University.

The Institute is the first of its kind in Canada, although there are others of a similar kind in the States. It is a response to the need for dealing with the ever increasing amount of emotional disturbance and personality problems. There may be some question as to whether mental ill health is actually increasing, since early statistical records are lacking for comparison. But certainly much more of it is recognized now than even a few decades ago. Fortunately this does not mean that all such patients need the care of the psychiatrist, but it does mean that all physicians should be as well equipped to deal with such things as personality problems, with stress, with emotional disturbance, as they are to deal with other matters of general medicine. It is in helping to provide such training both for psychiatrists and undergraduate medical students that the Institute fulfills another great need. Yet again the Institute has the important function as a centre where new psychiatric facilities can be evolved, all with the view to building up of mental health facilities in the Province.

It is with great and justifiable pride that the Institute can look back on its accomplishments in less than ten years. From the beginning patients were admitted to it on the same basis as they would have been to the parent Royal Victoria Hospital, free to come and stay only if they wished to do so. More striking, however, was the unique development of the "Day Hospital", which allowed patients to come in for treatment during daylight hours. This immediately became a most successful innovation and has received world wide attention. This was only one of a series of services. The Therapy Unit was set up for treatments which would last an hour or so, after which the patient would go home and come back as often as necessary.

The Follow-up Service was another special activity; the patient being first given in-patient care then brought back to continue for follow-up care. This not only shortens hospitalization care, but provides extremely valuable contacts with patients over long periods. Amongst these follow-up groups particularly are those for prevention of recurrent depressions and the special schizophrenia follow-up, both of which are found to be of great benefit.

The Extension Department is yet another development, by which instruction is given in the business of living. This is given to all who have problems they are seeking to solve. It is open not only to those who have been through the Institute but any who wish to apply for admission to its courses and group discussions. The Relatives Group which deals with problems of family living, the Discharge Discussion Group and the Alcohol Centre, are all further active developments of the Institute.

Now with the opening of the new wing, the facilities of the Institute are increased some two or three times. In Dr. Cameron's words "We are in the full tide of an immensely important expansion of our knowledge about mental health and illness".

H.E.M.

Up to the end of October the total number of cases of poliomyelitis reported for the Montreal area was 90, with a mortality of seven. In addition there were 23 cases, with no deaths, in other municipalities on the Island of Montreal.

The annual fall clinical convention of the Montreal Medico-Chirurgical Society was held at the various city hospitals between October 13 and 17. Several hundred doctors, mainly from the metropolitan and provincial areas but also from as far away as North Dakota and the Maritime Provinces, were registered. Without exception, all presentations, including ward rounds, papers and exhibits, were excellent.

A new feature of this year's program was the First Donald A. Hingston Memorial Lecture given by Dr. Claude F. Dixon of the Mayo Clinic who spoke on carcinoma of the rectum. This lecture is sponsored by the staff of the St. Mary's Hospital in memory of the late Dr. Donald E. Hingston. He was one of the founders of the hospital, the chief surgeon until 1943, Professor of Clinical Surgery at the University of Montreal and Honorary Consultant up to the time of his death on November 18, 1950. The Hon. Dr. Gaspard Fauteux, Lieutenant-Governor of Quebec, spoke at the annual clinical convention dinner.

There have been several notable meetings held recently in our Province. The International Anæsthesia Research Society held its 28th annual convention in Quebec City on October 26 to 29. From all reports it has achieved an outstanding scientific as well as social success. In the same city, the 10th annual convention of the Industrial Medical Society of the Province of Quebec was held in the early part of the month. In the last week of October the annual convention of the Royal College of Physicians and Surgeons of Canada was held in Montreal. At this meeting another 104 physicians who have completed the required five year

supervised postgraduate study became Fellows, thus swelling the enrolment of the 23 year old College to 1,373 members. This year's lecture in medicine was given by Dr. Garfield G. Duncan, clinical professor of medicine at Jefferson Medical College of Philadelphia, who spoke on the management of essential hypertension. Dr. Daniel C. Elkin, Whitehead Professor of Surgery at Emory University, Atlanta, gave the surgical lecture and spoke on arteriovenous fistulae. The Rt. Hon. Vincent Massey, Governor-General of Canada, was made an honorary Fellow at the convocation on October 31, and was guest speaker at the banquet in the evening.

Among our travellers this month Dr. Albert Guilbeault, head of the paediatrics service of Notre Dame Hospital and professor of the faculty of medicine of the University of Montreal, is attending, as Canada's official delegate, the International Congress of Paediatrics at Havana, Cuba. Following this meeting Dr. Guilbeault will also attend the American Academy of Paediatrics convention in the U.S.A. as president of the eastern section of the Canadian Paediatrics Society.

Dr. E. Rolland Blais of Montreal was elected president of L'Association des Bureaux Medicaux des Hopitaux at the annual meeting of the group held recently in Sherbrooke. Others elected were: Emile Pelletier of Quebec, first vice-president; Edmond Potvin of Chicoutimi, second vice-president; and Willie Major of Montreal, secretary treasurer.

At the Montreal Jewish General Hospital on October 28th Dr. Ramon Castroviego, assistant professor of the Columbia University College of Physicians and Surgeons and attending ophthalmologist of the Presbyterian Hospital of New York, delivered the first Jacob Rosenbaum Memorial Lecture. He spoke on the treatment of glaucoma. On October 29th at the same hospital Dr. Martin Hoffman, associate professor of medicine and psychiatry, McGill University, delivered this year's Louis Gross Memorial Lecture, under the auspices of the Montreal Clinical Society. He spoke on the treatment of thyroid diseases.

The medical fraternity of Montreal paid final tribute this month to two leading figures in Canadian medical circles. Dr. Georges Baril, dean of the faculty of sciences of the University of Montreal, died in his 68th year. Paul Emile Cardinal Leger, chancellor of the University, officiated at the Requiem Mass, assisted by Msgr. Georges Deniger, vice-rector, as assisting priest. Two groups of nurses, one from the Hotel Dieu and the other from Ste. Justine Hospital, formed a guard of honour at the church doors.

On October 28th, Dr. Charles F. Martin, recipient last spring of the C.M.A. Starr Award, died in his 85th year. Dr. Martin, who was largely responsible for founding the Royal College of Physicians and Surgeons in Canada, was the former dean of the McGill Medical School, past president of the C.M.A. and recipient of many honours and awards.

A. H. NEUFELD

## SASKATCHEWAN

Travel grants were awarded by the Saskatchewan Division of the Canadian Cancer Society to Dr. H. J. Bell and Mr. W. Chubaty of the Department of Physiology, University of Saskatchewan to attend the 19th International Physiology Congress held recently in Montreal.

The Department of Public Health of the Province of Saskatchewan has recently approved hospital grants in the amount of \$13,750; contingent on matching federal grants. The first grant of \$10,000 has been made available for Redvers Union Hospital to assist in the construction of a 40 foot extension to the existing building. This will provide additional accommodation for nurses,

patients and out-patient services, and improvements to the nursery, operating room and case room.

The second grant of \$3,750 has been made to the Climax Union Hospital to assist in constructing a nurses' residence.

The annual convention of the Saskatchewan Physical Therapists Association was held last month in Saskatoon. The following members of the College of Physicians and Surgeons of Saskatchewan took part in the program—Dr. Alex Stephen, Dr. R. H. MacPherson, Dr. H. O. Osmond, and Dr. D. Dale.

Dr. Murray S. Acker has been appointed director of the Research and Statistics Branch of the Saskatchewan Department of Public Health. In his new post, Dr. Acker will direct the analysis of statistical information compiled in connection with the department's public health and health services programs. This will also include organization of special studies aimed at the improvement of administrative procedures and the increased understanding of provincial health needs.

A project in which the Research and Statistics Branch is presently co-operating with other divisions is a special poliomyelitis survey of all cases reported in the province this year.

Mr. G. W. Myers, Executive Director of the Saskatchewan Hospital Services Plan has recently released figures which show the tremendous costs of accidents in this province. The 1952 figures, as with the previous year's, show that the total cost of hospitalization for discharged cases, classed as accidents, poisonings and violence, exceeded one million dollars.

Among beneficiaries of the Plan a total of 13,268 cases in the categories above mentioned were discharged from Saskatchewan hospitals in 1952. This was an increase of 731 over the previous year. These were the second most frequent causes of admission, being surpassed only by obstetrical patients.

The average days stay was 10.2 days and the average cost per patient day was \$8.00 for Saskatchewan Hospital Services Plan cases.

It must be noted in this connection that these figures do not include Workmen's Compensation Board patients or those who have resided in the province for less than six months, and as such the actual number of patients hospitalized would be greater than indicated by these statistics, and so the costs in actual cash, exclusive of all the other attendant economic and personal factors, would be in excess of the stated figure of \$1,108,984.40.

The opening of classes at the university in September marked the formal transition from the School of Medical Sciences to the College of Medicine. Graduating in 1957, students comprising the present freshman class will be the first to complete their medical undergraduate studies in Saskatoon. The occasion was celebrated by the visit of Professor William Boyd of the University of British Columbia as the first incumbent of the Dr. Peter Donald Stewart Memorial Lectureship. In the auditorium of the new medical building, crowded to the doors with students of medicine, nursing and "lab. tech.", faculty and practitioners, the lecturer was introduced by Dr. W. S. Lindsay, Dean Emeritus and virtually the founder of the medical school in Saskatoon. The theme was The Education of a Doctor. Drawing on his wide experience as a teacher, one who has been particularly close to the minds of his students, Dr. Boyd dealt with the attitudes and techniques to be sought by teachers and students who would combine professional competence with character and intellect. It was an inspiring occasion for all.

Subsequent lectures were on What is Pathology?, Thrombosis, Carcinogenesis, and Cause and Effect in Relation to Disease. The latter was delivered at an open meeting of the Faculty Club of the University. All are agreed that the selection of Dr. William Boyd as the first Stewart Lecturer was a felicitous choice.

The Stewart bequest to the university has permitted also a visiting professorship. In August, Professor Rocha e Silva of the University of Sao Paulo, Brazil, spent a week with Dr. Louis Jaques and staff in the Department of Physiology and Pharmacology. Other visiting speakers this fall have been Professor J. Z. Young, University College Hospital Medical School, London; Professor C. F. W. Illingworth, University of Glasgow; and Dr. Douglas Bond, Professor and Head of Psychiatry at Western Reserve University, Cleveland. The visit of the last was made possible by the Commonwealth Fund's grant for medical school planning. G. W. PEACOCK

## NEWS OF THE MEDICAL SERVICES

### *Canadian Armed Forces*

Surgeon Lieutenant H. D. McWilliam, R.C.N., has recently been appointed from R.C.N. Hospital in Victoria, B.C., to the Royal Victoria Hospital, Montreal, for a postgraduate course in Otolaryngology.

Surgeon Captain E. H. Lee, Medical Director General, of the Royal Canadian Navy, attended the annual conference of military Surgeons of the U.S.A. held in Washington, D.C., in November.

Brigadier K. A. Hunter, O.B.E., C.D., Q.H.P., R.C.A.M.C., Director General of Medical Services (Army) visited the 27 Canadian Infantry Brigade Group in Germany and inspected the medical units during the month of August and September, 1953. While in Europe, Brigadier Hunter visited the Director General Army Medical Services, R.A.M.C. and medical establishments in England and on the Continent. He also visited the Surgeon General at Supreme Headquarters, Allied Powers, Europe.

Lieut.-Col. P. A. Costin has been appointed Medical Liaison Officer at Canadian Army Liaison Establishment in London from Officer Commanding, 79 Field Ambulance in Germany. Lieut.-Col. J. W. B. Barr who was Medical Liaison Officer at CALE has been appointed Officer Commanding, 25 Field Ambulance in Germany. Major R. K. Muir has been promoted to the rank of Lieut.-Col. while on a training course in Pathology at Queen Mary's Veterans Hospital in Montreal.

Major A. M. Davidson was posted from Winnipeg Military Hospital to Whitehorse Military Hospital. Captain Y. Dufresne was posted to Camp Borden Station Hospital. Captain J. A. McGregor was posted from Wainwright Military Hospital to Calgary Military Hospital. Captain R. R. Wills has been posted to 25 Canadian Field Ambulance proceeding overseas to Europe. Captains M. P. D. Waldron and J. Harrop have been posted to the Far East.

Brigadier K. A. Hunter, O.B.E. C.D., Q.H.P., R.C.A.M.C., Director General of Medical Services, Colonel S. G. Shier, Command Medical Officer, Central Command and Major (Matron-in-Chief) E. E. Andrews, attended the Annual Meeting of the Association of Military Surgeons of the United States of America at Washington on November 9 to 11, 1953.

Colonel J. E. Andrew, Lieut.-Col. A. F. Nancekivell and Lieut.-Col. E. H. Ainslie attended the Annual Convention of the Fellows of the Royal College of Physicians and Surgeons of Canada at Montreal on October 30 and 31, 1953.

The Command Medical Officers' Conference was held at Army Headquarters on November 5 and 6, 1953.

Attending the conference, besides the Command Medical Liaison Officers of the United Kingdom and Washington, and the Officer Commanding, R.C.A.M.C. School, Camp Borden.

The annual conference of Staff Officers Medical Services and Commanding Officers of Auxiliary Medical Units was held at the R.C.A.F. Institute of Aviation Medicine, Toronto, Ontario, on November 26, 27 and 28, 1953.

Air Commodore A. A. G. Corbet, Director of Medical Services (Air), and Group Captain D. G. M. Nelson, Deputy Director, attended the 60th Annual Meeting of the Association of Military Surgeons of the United States at Washington, D.C., November 8 to 16, 1953.

The 21st Meeting of the D.N.D./D.V.A. Medical Coordinating Committee was held in Ottawa November 20, 1953, under the chairmanship of Air Commodore A. A. G. Corbet, Director of Medical Services (Air).

The annual meeting of the Defence Medical Association of Canada was held at the Chateau Laurier, Ottawa, on November 3 and 4, 1953. Representing the Navy were Surgeon Captain E. H. Lee, Medical Director General, R.C.N.; Surgeon Captain C. H. Best, R.C.N.(8); Surgeon Commander R. H. Roberts, R.C.N., Principal Medical Officer, R.C.N. Hospital, Halifax, N.S., and Surgeon Lieutenant H. D. Oliver, R.C.N., Principal Medical Officer of the Naval Air Station, Dartmouth, N.S. Dr. Best, Dr. Roberts and Dr. Oliver presented papers before the Association.

Representing the Army were Brigadier K. A. Hunter, O.B.E., C.D., Q.H.P., R.C.A.M.C., Director General of Medical Services (Army), Command Medical Officers, and Medical Officers in the Ottawa area.

A number of R.C.A.F. Medical Officers in the vicinity of Ottawa attended the meeting as well as the luncheon and annual dinner. Air Commodore A. A. G. Corbet, E.D., B.A., M.D., C.M., F.A.M., Q.H.P., gave a lecture on the Inter-Service Medical Committee activities and also on the work of the Medical Services of the R.C.A.F.

## NEWS AND NOTES

### THE WORLD DIRECTORY OF MEDICAL SCHOOLS

One of the most important productions of the World Health Organization is its newly published World Directory of Medical Schools. Questionnaires were directed to the institutions themselves and where replies were not forthcoming, information was sought in other available sources. Confession is made that some of the information may be inaccurate or obsolete. Nevertheless this is the first directory of its kind. More than 500 institutions are listed.

The book is published simultaneously in English and French. The data are arranged alphabetically by countries, and within countries by cities. Where there is more than one school in a city, the schools are arranged in alphabetical order. The information is arranged in thirteen columns, covering the name in the national language; the year founded, the administration, the academic year, the conditions for admission, the number of teaching personnel, the total enrollment, including male and female, the number of studies, the degrees obtainable, the annual number of graduates and the annual tuition fees in local currency.

The W.H.O. is to be congratulated on this masterly achievement. Unfortunately, pages 138 to 158 contain only column headings since the Union of Soviet Socialist Republics did not answer questionnaires and the material was not otherwise obtainable. Apparently the rest of the world co-operated.

(Continued on page 70 of the advertising section)

## BOOK REVIEWS

CAUSES AND PREVENTION OF  
TUBERCULOSIS

*B. R. Clarke, Consultant Physician, Northern Ireland Tuberculosis Authority; Lecturer in Tuberculosis, The Queen's University of Belfast. 288 pp. \$6.25. E. & S. Livingstone Ltd., Edinburgh and London; The Macmillan Company of Canada Ltd., Toronto, 1952.*

This is an extraordinarily interesting account of the causes, and the principles underlying the prevention, of tuberculosis. After briefly describing the tubercle bacillus, the author reviews the results of entrance of this micro-organism into the human body and discusses immunity and resistance in terms of race, family and individual. Chapters on environmental conditions, which are important in relation to resistance, follow. These include consideration of subjects such as nutrition, social and personal hygiene, medical and nursing services, and occupation. The subject of prevention of tuberculosis is discussed from the standpoints of prevention of infection, of prevention of disease in the infected individual, and of prevention in relation to treatment and rehabilitation. This section contains chapters on miniature film radiography and immunization against tuberculosis, chapters which, in the opinion of the present reviewer, do not measure up to the standard of the rest of the text. One puts this book down, however, recognizing that while the author appreciates that the search for effective means for treating persons with tuberculosis must go on he himself firmly believes—and his arguments are telling ones—that more emphasis than is presently the case in many places should be placed on measures known to be effective in the prevention of this disease.

## TEXTBOOK OF GYNÆCOLOGY

*W. Shaw, Surgeon in charge of the Obstetrical and Gynæcological Department, St. Bartholomew's Hospital. 672 pp. Illust. 6th ed. \$5.50. J. & A. Churchill Ltd., London; British Book Service (Canada) Ltd., Toronto, 1952.*

The Sixth Edition of Dr. Shaw's book continues to be a model of well-written English and, in general, is an excellent text for students. The chapters concerning Endocrinology, History and Physical Examination, Malformations, Dysmenorrhœa, Hormone Therapy, Fibroids and Endometriosis are excellent. Especially good also is the material on Vulvar Disease, Carcinoma, and Radiation Therapy. The scarcity of illustrations, however, particularly anatomical and operative, is a distinct disadvantage. The chapter on Embryology could be elaborated with profit to the student seeking to understand ovarian tumours. Statements which might raise an eyebrow on this side of the ocean include that recommending that patients after hysterectomy should be kept in bed for two weeks; also that a third degree obstetrical tear in the middle of the night would be better left till next day to repair. On the whole, however, this well known book should be a part of every medical library.

## PATHOLOGY OF THE CELL

*G. R. Cameron, Director of the Graham Research Laboratories and Professor of Morbid Anatomy at the University College Hospital Medical School in the University of London. 840 pp. Illust. £4:4-net. Oliver and Boyd, Edinburgh, 1952.*

In this book, Professor Cameron has made a monumental contribution to the history of the development of pathology. In Part I, commencing with the origins of the cell theory, there are fascinating accounts of the slow unfolding of the recognition of tissue cells and intercellular materials which laid the foundation for the

phenomenal advance in the modern era, a feat all the more amazing when one considers the crude optical instruments used by those staunch men, weighted heavily by the age old authority of scholism and tradition. Another 83 pages is devoted to the morphology of the cell, the nature of protoplasm and the cell membrane, the methods of investigation of the cell and the extracellular material, the life of the cell and finally, its function.

Part II, which comprises the bulk of the book, follows the same pattern as that in Part I. Commencing with the founding of the cellular theory of pathology, the evolution of pathology, to the present day is thoroughly discussed. A critical appraisal of the cell theory constitutes Part III, and in Part IV, the work concludes with a forecast of the cellular pathology of the future and a discussion of the modern means of investigation.

Professor Cameron's book is indeed, a fascinating and scholarly story of the many keen eyes and alert minds that have laid the foundations and have built up the supports of the vast structure of modern medicine.

INTERNATIONAL HEALTH  
ORGANIZATIONS AND THEIR WORK

*N. M. Goodman, late member, Health Committee of the League of Nations; Delegate for the United Kingdom to the Permanent Committee of the International Office of Public Health, Paris. 327 pp. Illust. \$7.00. J. & A. Churchill Ltd., London; British Book Service (Canada) Ltd., Toronto, 1952.*

The author has contrived to make an intensely interesting story out of what is too often regarded as the dry stuff of international health organizations and their work. This is due in large part to his delightful prose.

He attributes the large measure of agreement that has been achieved in international health matters to three powerful motives, fear, economy and a sense of responsibility towards one's neighbours. He commences with an exact definition of "international" health and indicates that no international agreement was possible until science had demonstrated specific methods by which major epidemic diseases were spread. The rest of the story unfolds naturally from the early attempts by consular bodies in Turkey and Egypt to stem the deadly epidemics emanating from the Holy Places of Islam to a description of the present day work of the World Health organization.

The theme of the text has not been obscured by detailed information. This has been relegated properly to concise appendices. The illustrations have been selected with care and are well reproduced. This work will be a useful addition to medical libraries and will be read with pleasure by all members of the profession who like to be well informed.

THERAPY OF DERMATOLOGIC  
DISORDERS

*Including a Guide to Diagnosis and a Dermatologic Pharmacopœia. Samuel M. Peck, Dermatologist to the Mount Sinai Hospital, New York City; Associate Clinical Professor of Dermatology, Columbia University, New York City; and George Klein, Associate Visiting Dermatologist, Morrisania City Hospital, New York City; Acting Adjunct, Mount Sinai Hospital; Assistant Clinical Professor of Dermatology, New York Medical College. 383 pp. \$7.80. Lea & Febiger, Philadelphia; The Macmillan Company of Canada Limited, 1951.*

Treatment is the ultimate objective in the patient's quest for medical care. The effective, prompt attainment of this goal is the physician's main purpose. Too often he is encumbered by the archaic clutter of his medical reference books. Vigorous pruning of cumulative therapeutic uselessness is a very essential task in the overall program

of medical education. It is not undertaken often enough, nor with sufficient courage by many authors.

Peck and Klein have been pruning. The student and the general practitioners will be grateful to them. The authors have chosen to be somewhat conservative but their approach is in the right direction. The summary format of the book is excellent. The concise "Clinical Characteristics" which precedes the therapy is a very useful diagnostic feature. There are numerous practical "pearls" which add greatly to the usefulness of the recommended therapy. The *Dermatologic Pharmacopoeia* in Part III lists the essential drugs used in practice. The non-essential has been almost entirely eradicated from this section. This publication will help the busy, overburdened family doctor and the undergraduate surfeited with bulky textbooks.

#### HANDBOOK OF TROPICAL DERMATOLOGY AND MEDICAL MYCOLOGY

R. D. G. Simons, *Senior Lecturer at the Dermatological Clinic of the University of Leyden; Dermatologist in Charge at the Civilian Hospital, Amsterdam. Vol. I. 845 pp. Illust. \$15.00. Elsevier Press Inc., Houston, Texas, 1952.*

Global perspective in human affairs has become an essential ingredient of life today. It colours all our thoughts and actions. No one can live unto himself. It has become important to the temperate zone dweller how his brother under the equatorial sun fares. The realm of medicine is no exception to the change toward a global viewpoint. Herein lies the importance to physicians in private practice and in public health of the "Handbook of Tropical Dermatology and Medical Mycology". This large tome, which to this reviewer at least appears large for a handbook, is an excellent reference. The contributions, each from a recognized leader in his respective field of tropical medicine, come from communities and teaching centres that girdle the globe. The clinical photographs are on the whole very good and the narrative up to the minute in essential content.

To one community in Canada which has uncovered three instances of leprosy in recent visitors, the handbook has been most useful. Every medical library and health department should have it among its reference books. One small suggestion—perhaps the editor for a second edition might consider a chapter on the World Health Organization effort as it touches on tropical dermatology including general information concerning global travel, quarantine regulations, etc.

#### PRINCIPLES OF HOSPITAL ADMINISTRATION

J. R. McGibony, *Medical Director; Chief, Division of Medical and Hospital Resources, Bureau of Medical Services, U.S. Public Health Service; American Board of Preventive Medicine and Public Health. 540 pp. \$7.75. G. P. Putnam's Sons, New York; McAtinsh & Co. Ltd., Toronto 5. 1952.*

Whether the building program is long completed or is in the process of completion or whether it is still in the planning stage, all in the hospital field with positions of responsibility will welcome this book. As the author says, "The purpose of this book is to bring together much of the knowledge pertaining to hospitals and make it available in compact form to all those interested in promotion of better patient care": and he adds that he

"claims little credit for original contributions". Dr. McGibony has chosen wisely in selecting his material from many sources. For those who are about to build, the section "Planning for Services" will be a most helpful reference in the consideration of such problems as measuring the community, fund raising, functional plans for hospital construction, the consultant, the architect, the hospital site, bed distribution, space requirements and relationships, construction costs, and equipment. The remaining three sections "Planning for Operation", "Management Services", and "Clinical Services" offer an almost complete reference library in very compact form.

While the book will be of chief interest to the administrator and his key department heads, every trustee should read it in order that he may have a better understanding of the work for which he is responsible. It is also a book which should have special value to members of the medical staff who have administrative responsibilities. One could go further and say that every member of the medical staff should be familiar with its content so that he might have a better appreciation of the problems of hospital administration. Such comprehensive works in the field of hospital administration are not numerous: Dr. McGibony's contribution is timely and by it he has gained the thanks of all of his colleagues.

#### PHYSIOLOGICAL FOUNDATIONS OF NEUROLOGY AND PSYCHIATRY

E. Gellhorn, *Professor of Neurophysiology, University of Minnesota. 556 pp. Illust. \$9.25. The University of Minnesota Press, Minneapolis; Thomas Allen Ltd., Toronto, 1953.*

The author reviews nervous transmission in somatic and autonomic systems, the changes in the electroencephalogram produced by various factors including hormones and anoxia, and both the cortical representation of movements and the interrelationship between sensory and motor processes. There is an excellent account of experimental convulsions, followed by the physiological aspect of consciousness and a summary of the relationship of the brain stem to the cortex and cortical function (the hypothalamic-reticulo-cortical structures). Not everybody would agree with the author's views on the work of Penfield and Rasmussen: "the idea of the diencephalon as the highest integrating mechanism for motor and sensory processes seems to have no support in experimental or clinical work".

A considerable part of this book is devoted to the autonomic system; the principles of neuro-endocrine action with special reference to the hypothalamus, stress and the sympathetico-adrenal response are discussed in detail. The author comments, from experimental work, that diminished reactivity of the sympathetic part of the autonomic system probably at hypothalamic cortical levels occurs in schizophrenia: he relates the effect of electric convulsive therapy to activation of the sympathetico-adrenal system: and at the same time suggests that the lesser responsiveness of ACTH in psychoses may be due to failure in reactivity of cortex and hypothalamus. The part of the book dealing with emotion made extremely interesting reading, and in the author's own words "the hypothalamus occupies a central place in the neurophysiology of emotion through the integration of viscerosomatic behaviour and through influences which exist between cortex and diencephalon". The effects of carbon dioxide therapy in psychoneurotic patients are related to an inhibitory effect on the hypothalamus, and the book concludes with a discussion on the effects of blood pressure response produced by mecholyl and adrenaline in relation to the type of treatment indicated in schizophrenia.

This book is well written, contains over 1,200 references, and is certainly recommended for both neurologists and psychiatrists for serious consideration and thought.

## LUMBAR DISC LESIONS

J. R. Armstrong, *Orthopædic Surgeon to the Metropolitan Hospital, Orthopædic Surgeon to Lambeth Hospital, Visiting Orthopædic Surgeon to Manor House Hospital (Industrial Orthopædic Society)*. 228 pp. Illust. \$8.00. E. & S. Livingstone Ltd., Edinburgh and London; The Macmillan Company of Canada Ltd., Toronto, 1952.

The author has offered, to those interested in the problems of low back pain, a complete discussion of lumbar disc lesions. He has not discussed the very small percentage of cervical and thoracic disc protheses. The whole approach is to be commended, starting with the fundamental physio-pathology, as it is known today, and proceeding through the phases of clinical picture, differential diagnosis and finally treatment.

The author has done well to emphasize the intermittent nature of the clinical picture, caution being expressed in regard to the claims of early cures. The section on the examination of the lumbar spine is adequate, as is the section on lower extremities. Chapter nine is concerned with supplementary procedures. It certainly does not give recognition to myelography as an important a position as exists in so many centres. One wonders whether the author has not, unfortunately so, underemphasized a very valuable diagnostic aid. However, he redeems himself in chapter ten, when he rightly emphasizes, to the unwary, the coexistence of disc lesions in spondylolisthesis and other problems that come for fusion. One can foresee the poor postoperative results if lack of recognition of this problem were to exist. Conservative treatment is emphasized in chapter thirteen. The various modifications of immobilization of the lumbar spine are discussed. He feels that only about 10 to 20% of all patients with lumbar disc lesions need come to operation. Operative methods, the problem of laminectomy, the position of the patient are all given adequate attention. The author has edited a very informative volume. It is to be recommended to those who wish to gain some insight into the problem of lumbar disc lesions. He has written clearly and to the point.

HANDBOOK OF TREATMENT OF  
ACUTE POISONING

E. H. Bensley, *Director, Department of Metabolism and Toxicology, The Montreal General Hospital*; and G. E. Joron, *Junior Assistant, Department of Medicine and Department of Metabolism and Toxicology, The Montreal General Hospital*. 201 pp. \$2.50. Renouf Publishing Co., Ltd., Montreal, P.Q., 1953.

Acute poisoning is a fairly common experience and every doctor should be able to give immediate and adequate treatment. This small book was prepared as a guide for such situations, and also a basis for instruction of students in the health professions and in first aid courses. The first part of this book covers the basic principles, a general plan for treating acute poisoning and discussions of individual methods of treatment. The second part describes the usual types of acute poisoning, with instructions for managing the patient before and after arrival of the doctor. Then follow brief notes on collection and preservation of samples for chemical analysis, a list of items for an emergency poison kit, and a brief list of recommended books on toxicology. It is probably quite true that children are the most frequent victims of accidental poisoning. Dosage recommendations given here are for adults with advice for appropriate modifications of doses for infants and children, where the doctor must rely to a large extent on experience or resort to empirical

dosage rules based on age and weight. This book is well written and readable. It should be favourably received as a quick handy reference.

BLOOD TRANSFUSION IN  
CLINICAL MEDICINE

P. L. Mollison, *Director, Medical Research Council's Blood Transfusion Research Unit, Lecturer in the Department of Medicine, Postgraduate Medical School of London*. 456 pp. Illust. \$10.50. Charles C. Thomas, Springfield, Illinois; The Ryerson Press, Toronto, 1952.

All pertinent information on blood transfusions is very adequately and clearly given in this book. The blood group factors are particularly well described. Regulations of blood volume by transfusion, effects of transfusion on the circulation, unfavourable effects such as incompatibility, hæmolytic reactions, air embolism, transmission of disease, exogenous hæmochromatosis and iso-immunization are all well covered. The author also presents a good deal of his own research, particularly on methods of blood preservation, survival of transfused cells, etc. The book includes an exhaustive and authoritative bibliography. No reference, however, is made to intra-arterial and positive pressure transfusions.

## A RAY OF DARKNESS

M. Evans, 192 pp. 12/6. Arthur Barker, London, England; The Roy Publishing Company, New York, 1952.

Every so often a book is written about an illness by one of those afflicted with it which proves so valuable that those who work in that field cannot afford to be without it, if they are to have any understanding of what their patients must endure. Such books are rare because illness not only does not encourage writing, it may even be a bar to writing at all. This book is one of those rare books requiring the closest attention of all those who have any dealing with the illness which it describes—epilepsy.

What then does Mrs. Evans achieve in her book? She gives a clear and well written account of the onset of epilepsy in a middle aged woman. She does not balk the details of discovering herself wet, bruised, with a bitten tongue and broken glasses and worst of all half an hour of her life just blotted out. She describes with great skill the fear which this arouses in her. She reminds those of us who do not have epilepsy that it is easy enough to bear with equanimity a burden which we do not in fact have to bear. Most doctors have said to an epileptic patient—"Why, Mr. So and so—you don't have fits very often now, do you?" without reminding ourselves that we do not have fits: ever.

She writes with power and beauty of that sense of "oneness" which occurs before many of the fits. How often do inarticulate people try to describe this to friends and even doctors who are unaware that such states can be? She also writes very acutely of her condition after she was put on anticonvulsants in a way that should surely convince those who need convincing that treatment in epilepsy is not just a matter of the right barbiturate. Mrs. Evans shows just how much effort is needed for the doctor to grasp some of the mysteries of what the ancients called, with perhaps a not entirely unwise respect, the sacred disease.

Every medical student should read this book early in his career and again shortly after graduating. Most general nurses could do so with advantage. Intelligent relatives and many patients will certainly be helped, the former to see a little more deeply into the matter, the latter to realize that others too have to strive hard with this mystery. Psychiatric social workers and psychiatric nurses must read and study this book. It goes without saying that for the family doctor, the neurosurgeon, the psychologist, the neurologist and the psychiatrist not to read it would amount to something like gross negligence.

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—Williams et al.: *Annals of Internal Medicine*, Sept., 1948.

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## THE FOUNDERS OF NEUROLOGY

*Edited by W. Haymaker, Chief, Neuropathology Section, Armed Forces Institute of Pathology, Washington, D.C. 479 pp. Illust. \$11.50. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.*

As the title suggests, this is a series of biographies, 133 in all, and includes most of the great anatomists, physiologists, pathologists, physicians and surgeons who have made a major contribution in the field of neurology. No living neurologists are included. It is an impressive international assembly, representing many European countries, Great Britain and the United States. Most important contributions to this field have come within the last hundred years, and particularly in the past fifty. During this period of hurried advance there has been little time until now, to pause, and look back.

The biographies are all too brief, hardly more than "thumbnail sketches". They are the work of 84 authors, mainly American neurologists. Each biography includes a portrait, a brief bibliography of important papers and a series of biographical references. The history of neurology is still to be written. These biographies contain much useful raw material, and it is to be hoped that they will stimulate much-needed research into historical aspects of neurology.

The editor should be congratulated on the uniform quality of the book. It will prove a useful source book for students of neurology and the history of medicine.

## NEW OUTLOOK ON MENTAL DISEASES

*F. A. Pickworth, Consultant Pathologist, Group 6 Hospitals, Birmingham. 296 pp. Illust. \$11.50. John Wright and Sons Ltd., London; The Macmillan Company of Canada Limited, Toronto, 1952.*

The author takes a strictly somatic viewpoint towards the etiology of psychiatric disorders. At a time when the importance of psychodynamic factors in the origin of mental illness is so much stressed, this approach is valuable. Pickworth gives detailed case histories in which inflammatory disease of the sinuses was related to onset of psychosis, with improvement of psychosis after removal of the infectious focus. From these observations he draws conclusions for the etiology of psychosis in general, relating it to inflammations of the base of the skull, especially around the pituitary gland. He theorizes about the vascularization of the cerebrum in connection with these disturbances and draws the far-reaching conclusion that all mental disorder has its origin in faulty mechanisms of this kind.

It seems to us that his conclusions in this direction are sometimes over-extended. However, he provides much material from his own studies and postmortem examinations, and he shows statistical evidence that treatment which clears up inflammatory foci is correlated with improvement of the mental disturbance. It

would certainly seem useful for the psychiatrist to keep these possibilities in mind.

The "New Outlook" thus is actually a revival of one old concept of the somatic origin of mental disorder, with attention focused on the infectious diseases of the sinuses. As such it is a valuable contribution especially in a time where the stress is upon psychodynamic views and psychiatrists are inclined to overlook physical origin of diseases for this reason.

## CHILDHOOD EXPERIENCE AND PERSONAL DESTINY

*W. V. Silverberg, Clinical Professor of Psychiatry, New York Medical College. 289 pp. \$5.00. Springer Publishing Company Inc., New York; Burns & MacEachern, Toronto, 1952.*

In this easily readable book, the author elaborates on Freud's theory of the genesis of personality and its deviation into neuroses, in our culture.

Though he illustrates his abstractions with a sprinkling of clinical examples, the reader would gain more from a systematic illustration with case-material and a note on the circumstance of technique employed to draw the substance of the material.

It is refreshing to see that the author does not hesitate to correct his old master. He argues that Freud may have been wrong in a number of ways: (1) There may be no such thing as the "latency-period" in which psychosexual conflicts mysteriously abate. (2) The Ego is not merely a part of intrapsychic topography but an important source of drives, of psychic energy (hitherto reserved for the id only). (3) The opposition of ego and id is not a defect leading to weakness, but a necessity leading to strength. (4) As Melanie Klein claims, the superego (at least now, half a century after Freud) begins its growth earlier. (5) The theory of Thanatos (death wish) may be the weakest link in the Freudian Structure.

Though the author either borrows freely from or often arrives at the conclusions of other than Freudian analysts, notably Jung and Adler, he does not give them sufficient credit. Indeed, it is regrettable that nowadays, when it is so necessary to have a unitary, eclectic, acceptable body of psychodynamic knowledge, a sensible writer like Silverberg, perhaps in collaboration with others of varying allegiance, does not set himself the larger task of editing a text of "comparative" psychodynamics and psychopathology with a view to unifying concepts. However, the author has successfully attained his own aim by giving the reader a pleasantly and warmly written dynamic description of patterns of adaptation and personality growth, based on normal psychosexual (in the wide sense) development and maladaptation (neurosis) based on traumatic experiences. His analysis of the masculine and feminine protests in our society, and his sober views on the healthy effects of moderate frustration are particularly worth digesting.

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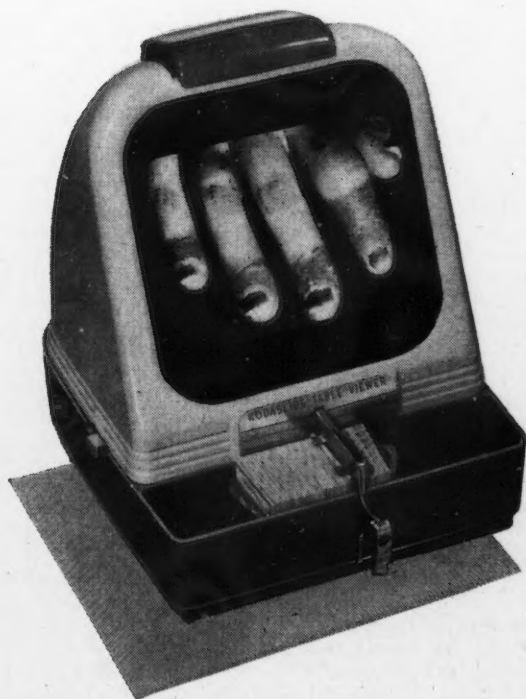
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## RECENT ADVANCES IN CHEMOTHERAPY

G. M. Findlay, Editor, *Abstracts of World Medicine and Abstracts of World Surgery, Gynaecology and Obstetrics, British Medical Association, London. 597 pp. Vol. II, 3rd ed. \$7.25. J. & A. Churchill Ltd., London; British Book Service (Canada) Ltd., Toronto, 1951.*

This very complete exposition of the chemotherapy of malaria is more detailed than most practitioners will require. To the pharmacologist, research worker or others requiring a reference book on the subject, it should prove most valuable. The author begins with a review of the biology of the malarial parasites, stressing the important and recently recognized extraerythrocytic phase of the asexual cycle in the vertebrate host. The chemistry of the antimalarial compounds is considered in great detail, and while stress is laid on those compounds now used in treatment, the history of their development and the many other compounds studied are mentioned. Very adequate chapters on the pharmacology and toxic reactions of these drugs are followed by a detailed review of the chemotherapy of plasmodial infections and consideration of drug resistance and immunity.

The treatment of malaria in man is considered in a most detailed manner in which the results of many forms of treatment are compared. In this regard it is unfortunate that the book went to press before the great value of primaquine had been established. The author concludes with a clear and detailed consideration of the mode of action of antimalarial drugs.

## GYNÆCOLOGY

Compiled and Edited by R. J. Lowrie, Associate Clinical Professor of Obstetrics and Gynaecology, College of Medicine, New York University; Attending Gynaecologist and Obstetrician, St. Vincent's Hospital. 806 pp. Illust. \$27.00. Charles C. Thomas, Springfield, Illinois; The Ryerson Press, Toronto, 1952.

This first volume of a new work on gynaecology is beautifully produced and illustrated. It comprises fifty-three chapters on diagnosis, non-operative treatment and minor gynaecological surgery, written by American, Canadian (five) and British (two) teachers. The editor has succeeded admirably in his intention of making specific data readily available via a well-planned and consistent format for each subject and an extensive and easily read index. This makes the book a useful one for the general practitioner who wishes to brush up quickly on the diagnosis or office treatment of any condition. For the postgraduate however, the separation of operative treatment into a second (and, as yet, unpublished) volume, has made the text lopsided and prevented complete uniformity in the presentation of the treatment of many conditions.

As far as this first volume goes, the book is extremely practical, a very worthwhile innovation being the inclusion of chapters on physical therapy and on medications commonly used in gynaecology with which, along

with a chapter on minor gynaecological procedures, this volume concludes. The psychiatric component in gynaecological practice has been given its correct importance throughout.

As claimed, "confusion and the controversial" have been reduced to a minimum by careful editing, although it is surprising to find the patient suffering from Simmond's disease still described as being "extremely emaciated and wasted" whereas the true appearance is vastly different; and surely the use of auto-transfusion in cases of acute tubal rupture in ectopic pregnancy is, nowadays at least, controversial?

## SURGERY OF THE EYE

M. Wiener, Emeritus Professor of Clinical Ophthalmology, Washington University School of Medicine; and H. G. Scheie, Associate Professor of Ophthalmology, The Medical School and Hospital, University of Pennsylvania. 449 pp. Illust. \$18.00. 3rd Revised Edition. Grune & Stratton, New York; The Ryerson Press, Toronto, 1952.

This excellent book has been well known to ophthalmologists since 1939. It is especially well illustrated so that the operative steps are clearly defined and do not leave too much to the imagination. The book does not attempt to present every known method for each operation but only those found to give the best results in the author's experience. The book has been largely rewritten in this third edition and modernized to conform with recent advancements. The chapter on glaucoma surgery is especially fine and that on retinal detachment is valuable. Above all, the book is easy and interesting to read.

## BIOCHEMISTRY OF DISEASE

M. Bodansky and O. Bodansky, Thoroughly revised and enlarged by O. Bodansky, Professor of Biochemistry, Sloan-Kettering Division, Cornell University Medical College. 1208 pp. Illust. 2nd ed. \$12.00. The Macmillan Company, New York, Toronto, 1952.

This second edition follows the presentation set forth in the original text written in 1939. As the title indicates, it is prepared for the physician and student interested in the various biochemical problems of clinical medicine. The subject is reviewed by systems rather than by diseases; for example, diseases of the heart and cardiovascular system, diseases of the kidney and genitourinary tract, disorders of the digestive system, diseases of muscle, etc. Most of the sections have been revised to conform to most recent information and an excellent bibliography is included. This text is recommended for the physician and student who wish to keep abreast of this rapidly-changing field.

## BLOOD CLOTTING AND ALLIED PROBLEMS

Transactions of the Fourth Conference, New York, N.Y. 1951. J. E. Flynn, Department of Pathology, College of Physicians and Surgeons Columbia University. 272 pp. \$4.00. Illust. Josiah Macy Jr. Foundation, New York, 1951.

The increasing complexity of scientific research has resulted in the emergence of many disciplines within Science in general and Medicine in particular. In these circumstances, integration of knowledge is of immense importance. It was the purpose of this Josiah Macy Jr. Foundation Conference to promote integration of knowledge regarding blood clotting. To this end a group of eminent authorities representing many disciplines met to discuss the problem. The published transactions make available to everyone the actual exchange of opinions that took place.

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### SUCCESS IN PSYCHOTHERAPY

W. Wolff, Editor, Professor of Psychology, Bard College, Annandale-on-Hudson, New York; and J. A. Precker, Research Associate, Bureau of Applied Social Research, Columbia University, New York. 196 pp. \$5.75. Grune & Stratton, New York; The Ryerson Press, Toronto, 1952.

Most of the chapters in this book are written by psychologists who discuss means of evaluating the outcome of therapy in an objective fashion. They point out that such terms as "cured" or "much improved" have little scientific meaning, and vary according to the goal the therapist has been aiming at when he initiated treatment. "The concept of adjustment" is another term which is given various meanings, depending on the therapist's theoretical background.

It is very difficult to quantify such a dynamic entity as personality, but it is believed that some attempt can be made to render evaluation of the therapeutic process more objective. The measurement of physiological deviations from homeostasis, through the psychogalvanic reflex, cardiovascular activity, and respiratory activity before and after therapy has yielded encouraging results in the case of the P.G.R. and cardiovascular activity; while respiratory activity has not yielded significant data. Other attempts at validation by psychological tests are described. One of the tests used is the Rorschach and, in view of the fact that its objectivity is contested by some, one wonders whether it is an appropriate assessing instrument from the scientific point of view.

The merit of this book is to point out to clinicians that objective criteria for the assessment of therapy are needed and to suggest some means of achieving this. It emphasizes an experimental approach which is often neglected in psychotherapy.

### FUNDAMENTALS OF CLINICAL ORTHOPÆDICS

P. A. Casagrande, Orthopaedic Department of Buffalo General Hospital, Buffalo Children's Hospital, and the University of Buffalo Medical School; and H. M. Frost, Jr., Orthopaedic Department of Buffalo General Hospital and the University of Buffalo Medical School, Buffalo, New York. 582 pp. Illust. \$22.50. Grune & Stratton, New York; The Ryerson Press, Toronto, 1953.

The title of this entirely new volume on orthopaedic problems is well chosen because, as the introduction and forewords indicate, no attempt is made to present a complete discussion of the enormous amount of information available concerning disabilities of the musculo-skeletal system. Rather, the authors have selected wisely, and more importantly, successfully organized material which offers a broad background of knowledge of all the common and important diseases now segregated in the specialty of orthopaedics. A considerable amount of space is devoted to a pertinent discussion of the underlying basic aspects of physiology and metabolism, functional anatomy, and the technical problems of immobilization as applied to trauma and specific disease. In the following chapters congenital diseases, collagen and joint diseases, bone diseases and tumours, and diseases of nerves, muscles and soft tissues are presented in a uniformly systematized manner. The final chapters deal with regional orthopaedics with a brief discussion of splints and prostheses in general, and shoe problems in particular.

Controversial points in etiology are not discussed fully, and advice in treatment represents the generally accepted procedures of well-proven merit. This is not a major reference volume, but is ideally suited to the needs of surgical trainees whether their interest is general or in the specialty of orthopaedic problems of any type.

## Books Received

Books are acknowledged as received, but in some cases reviews will also be made in later issues.

**Ciba Foundation Colloquia on Endocrinology.** Hormones, Psychology and Behaviour and Steroid Hormone Administration. Edited by G. E. W. Wolstenholme, and Margaret P. Cameron. Vol. III. 380 pp., illust., \$7.00. J. & A. Churchill Ltd., London W.1; British Book Service (Canada) Ltd., Toronto, 1952.

**Ciba Foundation Colloquia on Endocrinology.** Anterior Pituitary Secretion and Hormonal Influences in Water Metabolism. Edited by G. E. W. Wolstenholme and Margaret P. Cameron. Vol. IV. 591 pp., illust., \$9.00. J. & A. Churchill Ltd., London W.1; British Book Service (Canada) Ltd., Toronto, 1952.

**Ciba Foundation Colloquia on Endocrinology.** Bioassay of Anterior Pituitary and Adrenocortical Hormones. Edited by G. E. W. Wolstenholme, and Margaret P. Cameron. Vol. V. 228 pp., illust., \$5.00. J. & A. Churchill Ltd., London W.1; British Book Service (Canada) Ltd., Toronto, 1953.

**Histochemistry.** A. G. E. Pearse, Lecturer in Histochemistry at the Postgraduate Medical School (University of London). 530 pp., illust., \$12.00. J. & A. Churchill Ltd., London, W.1; British Book Service (Canada) Ltd., Toronto, 1953.

**Problems of Fertility in General Practice.** J. Stallworthy, Obstetrician and Gynaecologist, Radcliffe Infirmary, Oxford; Examiner in Midwifery and Gynaecology, Oxford University; and others. 259 pp., illust., \$4.00. Cassell and Co. Ltd., London; British Book Service (Canada) Ltd., Toronto, 1953.

**Clinical Approach to Fevers.** C. J. McSweeney, Medical Superintendent of the House of Recovery and Fever Hospital, Cork Street, Dublin; Lecturer in Infectious Diseases, Trinity College, Dublin. 146 pp., \$2.50. J. & A. Churchill Ltd., London; British Book Service (Canada) Ltd., Toronto, 1953.

**How to Use a Medical Library.** A Guide for Practitioners, Research workers and students. L. T. Morton, Information Officer, British Medical Journal. 44 pp., 2nd ed., \$1.00. William Heinemann Medical Books Ltd., London; British Book Service (Canada) Ltd., Toronto, 1952.

**The Sulphonamides and Antibiotics in Man and Animals.** J. S. Lawrence, Lecturer, The Department of Occupational Health, The University of Manchester; and J. Francis, Professor of Preventive Medicine, University of Queensland Veterinary School, Brisbane. 482 pp., illust., 42s. H. K. Lewis & Co. Ltd., London W.C.1, 1953.

**Child Training and Personality.** J. W. M. Whiting, Graduate School of Education, Harvard University; and I. L. Child, Department of Psychology, Yale University. 353 pp., illust., \$6.25. Yale University Press, New Haven; Burns & MacEachern, Toronto, 1953.

**The Suprarenal Cortex.** Proceedings of the Fifth Symposium of the Colston Research Society held in the University of Bristol, April 1st - 4th, 1952. Edited by J. M. Yoffey. 232 pp., illust., \$6.80. Butterworth & Co. (Canada) Ltd., Toronto, 1953.

**An Arterial Systole.** C. B. Rossiter, formerly Honorary Physician to the Auckland General Hospital, N.Z. 18 pp., 5/-; Wright & Jaques Ltd., Auckland, N.Z.

**Tumors of the Orbit and Allied Pseudo Tumors.** R. G. Ingalls, formerly, Instructor in Ophthalmology, College of Physicians and Surgeons, Columbia University; formerly, Assistant Ophthalmologist, Presbyterian Hospital and Vanderbilt Clinic. 410 pp., illust., \$12.75. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

**The Metabolism of the Tubercle Bacillus.** W. F. Drea, Associate Laboratory Director, Colorado Foundation for Research in Tuberculosis, Colorado College, Colorado Springs, Colorado; and A. Andrejew, Research Staff, National Center for Scientific Research in France, Pasteur Institute, Paris. 448 pp., illust., \$13.75. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

**Man's Back.** T. A. Willis, Formerly Head, Department of Orthopedic Surgery, St. Luke's Hospital; Consulting Orthopedic Surgeon, U.S.P.H.S. Hospital, Cleveland, Ohio. 161 pp., illust., \$10.50. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

**The Gold-Headed Cane.** W. MacMichael. 186 pp., illust., 6th ed., \$7.25. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

**The Diabetic Neuropathies.** J. I. Goodman, Senior Clinical Instructor, Western Reserve University; Senior Visiting Physician and Physician in Charge of Diabetic Clinic, Mount Sinai Hospital; and others. 138 pp., illust., \$5.25. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

**Shame and Guilt.** G. Piers, Staff Member, The Institute for Psychoanalysis, Chicago, Ill.; and M. B. Singer, Professor of the Social Sciences, The College of the University of Chicago, Chicago, Ill. 86 pp., \$3.50. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

**Hypersplenism.** C. C. Sturgis, Chairman of the Department of Internal Medicine, Professor of Internal Medicine and Director of the Thomas Henry Simpson Memorial Institute for Medical Research, University of Michigan. 97 pp., illust., \$3.50. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

(Continued on page 40)

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**References:** in the case of a journal arrange as follows: author (JONES, A. B.), title, journal, volume, page, year. In the case of a book: WILSON, A., Practice of Medicine, Macmillan, London, 1st ed., p. 120, 1922.

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## GYNÆCOLOGY

Compiled and Edited by R. J. Lowrie, Associate Clinical Professor of Obstetrics and Gynaecology, College of Medicine, New York University; Attending Gynaecologist and Obstetrician, St. Vincent's Hospital. 806 pp. Illust. \$27.00. Charles C. Thomas, Springfield, Illinois; The Ryerson Press, Toronto, 1952.

This first volume of a new work on gynaecology is beautifully produced and illustrated. It comprises fifty-three chapters on diagnosis, non-operative treatment and minor gynaecological surgery, written by American, Canadian (five) and British (two) teachers. The editor has succeeded admirably in his intention of making specific data readily available via a well-planned and consistent format for each subject and an extensive and easily read index. This makes the book a useful one for the general practitioner who wishes to brush up quickly on the diagnosis or office treatment of any condition. For the postgraduate however, the separation of operative treatment into a second (and, as yet, unpublished) volume, has made the text lopsided and prevented complete uniformity in the presentation of the treatment of many conditions.

As far as this first volume goes, the book is extremely practical, a very worthwhile innovation being the inclusion of chapters on physical therapy and on medications commonly used in gynaecology with which, along

with a chapter on minor gynaecological procedures, this volume concludes. The psychiatric component in gynaecological practice has been given its correct importance throughout.

As claimed, "confusion and the controversial" have been reduced to a minimum by careful editing, although it is surprising to find the patient suffering from Simmond's disease still described as being "extremely emaciated and wasted" whereas the true appearance is vastly different; and surely the use of auto-transfusion in cases of acute tubal rupture in ectopic pregnancy is, nowadays at least, controversial?

## SURGERY OF THE EYE

M. Wiener, Emeritus Professor of Clinical Ophthalmology, Washington University School of Medicine; and H. G. Scheie, Associate Professor of Ophthalmology, The Medical School and Hospital, University of Pennsylvania. 449 pp. Illust. \$18.00. 3rd Revised Edition. Grune & Stratton, New York; The Ryerson Press, Toronto, 1952.

This excellent book has been well known to ophthalmologists since 1939. It is especially well illustrated so that the operative steps are clearly defined and do not leave too much to the imagination. The book does not attempt to present every known method for each operation but only those found to give the best results in the author's experience. The book has been largely rewritten in this third edition and modernized to conform with recent advancements. The chapter on glaucoma surgery is especially fine and that on retinal detachment is valuable. Above all, the book is easy and interesting to read.

## BIOCHEMISTRY OF DISEASE

M. Bodansky and O. Bodansky, Thoroughly revised and enlarged by O. Bodansky, Professor of Biochemistry, Sloan-Kettering Division, Cornell University Medical College. 1208 pp. Illust. 2nd ed. \$12.00. The Macmillan Company, New York, Toronto, 1952.

This second edition follows the presentation set forth in the original text written in 1939. As the title indicates, it is prepared for the physician and student interested in the various biochemical problems of clinical medicine. The subject is reviewed by systems rather than by diseases; for example, diseases of the heart and cardiovascular system, diseases of the kidney and genitourinary tract, disorders of the digestive system, diseases of muscle, etc. Most of the sections have been revised to conform to most recent information and an excellent bibliography is included. This text is recommended for the physician and student who wish to keep abreast of this rapidly-changing field.

## BLOOD CLOTTING AND ALLIED PROBLEMS

Transactions of the Fourth Conference, New York, N.Y. 1951. J. E. Flynn, Department of Pathology, College of Physicians and Surgeons Columbia University. 272 pp. \$4.00. Illust. Josiah Macy Jr. Foundation, New York, 1951.

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### SUCCESS IN PSYCHOTHERAPY

W. Wolff, Editor, Professor of Psychology, Bard College, Annandale-on-Hudson, New York; and J. A. Precker, Research Associate, Bureau of Applied Social Research, Columbia University, New York. 196 pp. \$5.75. Grune & Stratton, New York; The Ryerson Press, Toronto, 1952.

Most of the chapters in this book are written by psychologists who discuss means of evaluating the outcome of therapy in an objective fashion. They point out that such terms as "cured" or "much improved" have little scientific meaning, and vary according to the goal the therapist has been aiming at when he initiated treatment. "The concept of adjustment" is another term which is given various meanings, depending on the therapist's theoretical background.

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The merit of this book is to point out to clinicians that objective criteria for the assessment of therapy are needed and to suggest some means of achieving this. It emphasizes an experimental approach which is often neglected in psychotherapy.

### FUNDAMENTALS OF CLINICAL ORTHOPÆDICS

P. A. Casagrande, Orthopædic Department of Buffalo General Hospital, Buffalo Children's Hospital, and the University of Buffalo Medical School; and H. M. Frost, Jr., Orthopædic Department of Buffalo General Hospital and the University of Buffalo Medical School, Buffalo, New York. 582 pp. 111. \$22.50. Grune & Stratton, New York; The Ryerson Press, Toronto, 1953.

The title of this entirely new volume on orthopædic problems is well chosen because, as the introduction and forewords indicate, no attempt is made to present a complete discussion of the enormous amount of information available concerning disabilities of the musculo-skeletal system. Rather, the authors have selected wisely, and more importantly, successfully organized material which offers a broad background of knowledge of all the common and important diseases now segregated in the specialty of orthopædics. A considerable amount of space is devoted to a pertinent discussion of the underlying basic aspects of physiology and metabolism, functional anatomy, and the technical problems of immobilization as applied to trauma and specific disease. In the following chapters congenital diseases, collagen and joint diseases, bone diseases and tumours, and diseases of nerves, muscles and soft tissues are presented in a uniformly systematized manner. The final chapters deal with regional orthopædics with a brief discussion of splints and prostheses in general, and shoe problems in particular.

Controversial points in etiology are not discussed fully, and advice in treatment represents the generally accepted procedures of well-proven merit. This is not a major reference volume, but is ideally suited to the needs of surgical trainees whether their interest is general or in the specialty of orthopædic problems of any type.

## Books Received

Books are acknowledged as received, but in some cases reviews will also be made in later issues.

**Ciba Foundation Colloquia on Endocrinology.** Hormones, Psychology and Behaviour and Steroid Hormone Administration. Edited by G. E. W. Wolstenholme and Margaret P. Cameron. Vol. III. 380 pp., illust., \$7.00. J. & A. Churchill Ltd., London W.1; British Book Service (Canada) Ltd., Toronto, 1952.

**Ciba Foundation Colloquia on Endocrinology.** Anterior Pituitary Secretion and Hormonal Influences in Water Metabolism. Edited by G. E. W. Wolstenholme and Margaret P. Cameron. Vol. IV. 591 pp., illust., \$9.00. J. & A. Churchill Ltd., London W.1; British Book Service (Canada) Ltd., Toronto, 1952.

**Ciba Foundation Colloquia on Endocrinology.** Bioassay of Anterior Pituitary and Adrenocortical Hormones. Edited by G. E. W. Wolstenholme and Margaret P. Cameron. Vol. V. 228 pp., illust., \$5.00. J. & A. Churchill Ltd., London W.1; British Book Service (Canada) Ltd., Toronto, 1953.

**Histochemistry.** A. G. E. Pearse, Lecturer in Histochemistry at the Postgraduate Medical School (University of London). 530 pp., illust., \$12.00. J. & A. Churchill Ltd., London, W.1; British Book Service (Canada) Ltd., Toronto, 1953.

**Problems of Fertility in General Practice.** J. Stallworthy, Obstetrician and Gynaecologist, Radcliffe Infirmary, Oxford; Examiner in Midwifery and Gynaecology, Oxford University; and others. 259 pp., illust., \$4.00. Cassell and Co. Ltd., London; British Book Service (Canada) Ltd., Toronto, 1953.

**Clinical Approach to Fevers.** C. J. McSweeney, Medical Superintendent of the House of Recovery and Fever Hospital, Cork Street, Dublin; Lecturer in Infectious Diseases, Trinity College, Dublin. 146 pp., \$2.50. J. & A. Churchill Ltd., London; British Book Service (Canada) Ltd., Toronto, 1953.

**How to Use a Medical Library.** A Guide for Practitioners, Research workers and students. L. T. Morton, Information Officer, British Medical Journal. 44 pp., 2nd. ed., \$1.00. William Heinemann Medical Books Ltd., London; British Book Service (Canada) Ltd., Toronto, 1952.

**The Sulphonamides and Antibiotics in Man and Animals.** J. S. Lawrence, Lecturer, The Department of Occupational Health, The University of Manchester; and J. Francis, Professor of Preventive Medicine, University of Queensland Veterinary School, Brisbane. 482 pp., illust., 42s. H. K. Lewis & Co. Ltd., London W.C.1, 1953.

**Child Training and Personality.** J. W. M. Whiting, Graduate School of Education, Harvard University; and I. L. Child, Department of Psychology, Yale University. 353 pp., illust., \$6.25. Yale University Press, New Haven; Burns & MacEachern, Toronto, 1953.

**The Suprarenal Cortex.** Proceedings of the Fifth Symposium of the Colston Research Society held in the University of Bristol, April 1st - 4th, 1952. Edited by J. M. Yoffey. 232 pp., illust., \$6.80. Butterworth & Co. (Canada) Ltd., Toronto, 1953.

**An Arterial Systole.** C. B. Rossiter, formerly Honorary Physician to the Auckland General Hospital, N.Z. 18 pp., 5/-; Wright & Jaques Ltd., Auckland, N.Z.

**Tumors of the Orbit and Allied Pseudo Tumors.** R. G. Ingalls, formerly, Instructor in Ophthalmology, College of Physicians and Surgeons, Columbia University; formerly, Assistant Ophthalmologist, Presbyterian Hospital and Vanderbilt Clinic. 410 pp., illust., \$12.75. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

**The Metabolism of the Tubercle Bacillus.** W. F. Drea, Associate Laboratory Director, Colorado Foundation for Research in Tuberculosis, Colorado College, Colorado Springs, Colorado; and A. Andrejew, Research Staff, National Center for Scientific Research in France, Pasteur Institute, Paris. 448 pp., illust., \$13.75. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

**Man's Back.** T. A. Willis, Formerly Head, Department of Orthopedic Surgery, St. Luke's Hospital; Consulting Orthopedic Surgeon, U.S.P.H.S. Hospital, Cleveland, Ohio. 161 pp., illust., \$10.50. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

**The Gold-Headed Cane.** W. MacMichael. 186 pp., illust., 6th ed. \$7.25. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

**The Diabetic Neuropathies.** J. I. Goodman, Senior Clinical Instructor, Western Reserve University; Senior Visiting Physician and Physician in Charge of Diabetic Clinic, Mount Sinai Hospital; and others. 138 pp., illust., \$5.25. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

**Shame and Guilt.** G. Piers, Staff Member, The Institute for Psychoanalysis, Chicago, Ill.; and M. B. Singer, Professor of the Social Sciences, The College of the University of Chicago, Chicago, Ill. 86 pp., \$3.50. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

**Hypersplenism.** C. C. Sturgis, Chairman of the Department of Internal Medicine, Professor of Internal Medicine and Director of the Thomas Henry Simpson Memorial Institute for Medical Research, University of Michigan. 97 pp., illust., \$3.50. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

(Continued on page 40)

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**References:** in the case of a journal arrange as follows: author (JONES, A. B.), title, journal, volume, page, year. In the case of a book: WILSON, A., Practice of Medicine, Macmillan, London, 1st ed., p. 120, 1922.

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**POSITION WANTED.**—Fellowship qualified internist and gastroenterologist, including fluoroscopy of the gastrointestinal tract, wishes to associate with individual of group. Graduate McGill. Training Montreal and Lahey Clinic, Boston. Available July 1, 1954. Apply to Box 763, Canadian Medical Association Journal, 3640 University Street, Montreal, Que.

**POSITION WANTED.**—General surgeon, age 37, veteran, just completed seven years' training in general surgery including orthopaedics, F.R.C.S. eligible, wishes association with individual surgeon or group. Apply to Box 764, Canadian Medical Association Journal, 3640 University Street, Montreal, Que.

**POSITIONS WANTED.**—2 general practitioners, 38 and 33, both married, require partnership, assistantship or opening to practice together or singly. Ontario, Alberta or British Columbia preferred. Apply to Box 749, Canadian Medical Association Journal, 3640 University Street, Montreal 2, Que.

**Books Received**

**The Grassl Block Substitution Test for Measuring Organic Brain Pathology.** J. R. Grassl, Director of Clinical Psychology, Assistant Professor of Clinical Psychology, Bowman Gray School of Medicine, Wake Forest College, Winston-Salem, North Carolina. 75 pp., illust., \$3.25. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

**Prospects in Psychiatric Research.** The Proceedings of the Oxford Conference of the Mental Health Research Fund, March, 1952. Edited by J. M. Tanner. 197 pp., illust., \$5.75. Blackwell Scientific Publications, Oxford, England; The Ryerson Press, Toronto, 1953.

**The Founders of Neurology.** Edited by W. Haymaker, Chief, Neuropathology Section, Armed Forces Institute of Pathology, Washington, D.C. 479 pp., illust., \$11.50. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

**Sacral Nerve-Root Cysts.** I. M. Tarlov, Professor of Neurology and Neurosurgery, New York Medical College, New York City. 134 pp., illust., \$7.25. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

**Nervous Transmission.** I. Tasaki, Central Institute for the Deaf, St. Louis, Missouri. 164 pp., illust., \$8.25. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

**Contact Dermatitis.** G. L. Waldbott, Senior Physician, Harper Hospital; Chief of Division of Allergy, Assistant Physician, Grace Hospital. 218 pp., illust., \$9.75. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

**The Roentgen Aspects of the Papilla and Ampulla of Vater.** M. H. Poppel, Professor of Radiology, New York University Post-Graduate Medical School; H. G. Jacobson, Director, Department of Roentgenology, Hospital for Special Surgery, Associate Clinical Professor of Radiology, New York University Post-Graduate Medical School; and R. W. Smith, Senior Resident in Radiology, Veterans Administration Hospital, Bronx, N.Y. 195 pp., illust., \$8.50. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1953.

**The Theory of Wholes in Chemistry.** J. Vine. 97 pp., illust., \$3.00. Newman Wolsey Ltd., Holborn Place, London, W.C.1. 1953.

**Juvenile Delinquency.** J. D. W. Pearce, Physician-in-charge, Departments of Psychiatry, St. Mary's Hospital and Queen Elizabeth Hospital for Children, London. 396 pp., \$5.00. Cassell and Company Ltd., London; British Book Service (Canada) Ltd., Toronto 6, 1952.

**Adrenal Cortex.** Transactions of the Fourth Conference, November 12, 13, and 14, 1952, New York, N.Y. Edited by E. P. Ralli, Associate Professor of Medicine, College of Medicine, New York University, New York, N.Y. 165 pp., illust., \$4.00. Josiah Macy, Jr. Foundation, New York, N.Y., 1953.

**Thoracic Surgery and Related Pathology.** G. E. Lindskog, Professor of Surgery, Yale University School of Medicine; and A. A. Liebow, Professor of Pathology, Yale University School of Medicine. 644 pp., illust., \$15.00. Appleton-Century-Crofts, Inc., New York, 1953.



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case for

## **INTRADEX** blood-volume expander

- 6% solution of DEXTRAN in normal saline; 540 cc. bottles
- can be given immediately to restore blood-volume; no need to await "cross-matching"
- is sterile, non-antigenic, non-pyrogenic; is not retained in the body tissues
- stable at room temperature; sets new standards in transfusion costs, too.



GLAXO (CANADA) LIMITED, 26 DUNCAN ST., TORONTO, ONTARIO

## Thirty Years Ago . . .

From the *Journal* of December, 1923

### EDITORIAL—Forecast for the Coming Year

. . . . "In forecasting the work of the coming year, the Board desires to emphatically remind all members of the Canadian Medical Association of the fact that the *Journal* is their journal. The great aim of the Editor and of the members of the Board is to make the *Journal* truly representative of Canadian medical thought and activity, by publishing all important papers presented before its Dominion and every provincial association and recording all important research work carried on in Canadian universities and hospitals. . . .

"To accomplish this it must have the assistance of the members of the Association, and reports from the various secretaries of important items suitable for publication must be received by the middle of the month so that they may appear in the issue of the following month. Delayed reports are of little value. News items of interest are requested from every province.

"Original papers are always acceptable when concisely written and not too long. Space in the *Journal* is valuable and costs the Association money. Lengthy papers are seldom carefully read."

### EDITORIAL—The Tuberculous Man at Home

"There are men who can write attractively about subjects which may have become trite; and, what is more, they can write repeatedly, with unfailing attractiveness. A subject which may thus have lost its sharpness of interest to those not specializing in it is tuberculosis: a writer who can so restore their keenness of interest is Dr. David A. Stewart. How arresting is one of his opening sentences! 'The tuberculous man at home

is an end-product of our anti-tuberculous campaign.' And then, 'Whatever he may be or not be, our systems are pretty much on trial in him'."

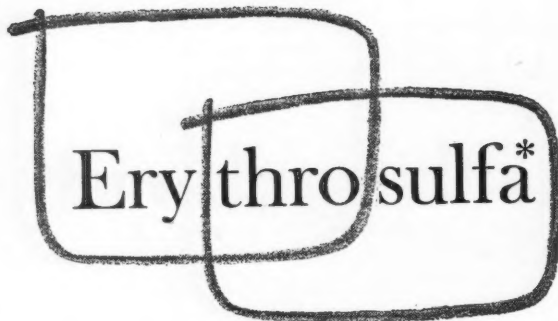
"There are the two fundamental points—the responsibility of the medical man in sending the patient back to his home, and the desire to go to the utmost limits in helping him, limits which may seem to lie even beyond those of medical responsibility. . . .

"He gives certain things to the patient thus sent forth; he would try to give him others. Diagnosis has been given, 'and, let us hope, this diagnosis has been early, exact and adequate'; also, treatment and instruction. What he would give him further is something that is much harder to give, for it is nearly a re-creation of the whole mental and spiritual outlook of the patient. He quotes Bushnell as saying that 'the cure of tuberculosis is not medicine but a mode of life.' And to support that mode of life there must be deep spiritual energy. In one passage there comes a faint echo of *Erehwon*, 'The tuberculous man at home . . . is the man who has been soundly converted; who has seen the error of his ways; who has turned over a new leaf. . . .'"

### EDITORIAL COMMENT

"A correspondent has forwarded to us a circular sent out by the Civil Service of Canada announcing open competitive examinations for several positions, among which is one for a medical officer for the Department of Health at an initial salary of \$2,400.00 per annum which may be increased upon recommendation for efficient service at the rate of \$120.00 per annum until a maximum of \$2,880.00 per annum has been reached. . . . The *Journal* on behalf of the profession in the Dominion protests against such a small salary for work of such a high character demanding at least 6 years of college training and 2 or 3 years of practical experience."

### reinforced action in common infections



antibiotic action of erythromycin  
chemotherapeutic  
effect of triple sulfonamides

valuable especially in staphylococcal,  
streptococcal, and pneumococcal  
infections

#### Each tablet contains

Erythromycin . . . 100 mg.  
Sulfadiazine . . . 0.083 Gm.  
Sulfamerazine . . 0.083 Gm.  
Sulfamethazine . 0.083 Gm.

\*TRADEMARK

**Upjohn**

THE UPJOHN COMPANY OF CANADA  
384 ADELAIDE STREET, WEST, TORONTO

From a report on "Conditions in Canada in the Combat against Tuberculosis": R. E. Wodehouse.

Facilities for Treatment. We have in Canada today over 4,000 sanatorium beds for the tuberculous, or 4.6 per 10,000 people. They are distributed by provinces, as follows:

Prince Edward Island . . . . .	0
Quebec . . . . .	less than 4.6
Saskatchewan . . . . .	less than 4.6
Alberta . . . . .	less than 4.6
British Columbia . . . . .	Dominion average
Nova Scotia . . . . .	5.6
Ontario . . . . .	over 6 beds per 10,000 people
Manitoba . . . . .	over 6 beds per 10,000 people
New Brunswick . . . . .	over 6 beds per 10,000 people

Increased accommodation is under way in four provinces now.

Results. We had in Canada 7,559 deaths from tuberculosis in the nine provinces during 1922, or a rate of 84.4 per 100,000 living. The rates by provinces are from Atlantic to Pacific:

Prince Edward Island . . . . .	127
Nova Scotia . . . . .	132
New Brunswick . . . . .	107
Quebec . . . . .	122
Ontario . . . . .	66
Manitoba . . . . .	60
Saskatchewan . . . . .	44
Alberta . . . . .	51
British Columbia . . . . .	74



*the new*  
**BROADLY EFFECTIVE**  
*vitamin B complex*  
*supplement*



# MEJALIN

Designed for broader and more complete effectiveness, Mejalin Capsules supply *eight identified B vitamins* in well balanced amounts. *Liver* is added for its contribution of additional B vitamins and possibly of other nutrients. *Iron* is included since B complex-deficient diets are often iron-deficient also.

Conditions in which the broad B vitamin protection of Mejalin is needed include not only inadequate dietary intake, due to restriction or irregularity, but stress periods, such as adolescence and pregnancy, and other conditions of increased need or impaired utilization of B vitamins, as in oral antibiotic therapy.

Small and easy to swallow, Mejalin Capsules are readily accepted by patients.

**Each Mejalin Capsule supplies:**

Thiamine.....	1 mg.
Riboflavin.....	1 mg.
Niacinamide.....	10 mg.
Pyridoxine hydrochloride....	0.4 mg.
Calcium d-pantothenate.....	1.7 mg.
Vitamin B <sub>12</sub> (crystalline).....	1 mcg.
Folic acid.....	0.7 mg.
Biotin.....	0.02 mg.
Desiccated liver.....	300 mg.
Iron (from ferrous sulphate) ..	7.5 mg.

Bottles of 100



## MEJALIN

**MEAD**

MEAD JOHNSON & CO. OF CANADA, LTD., Belleville, Ontario

## NEWS AND NOTES

(Continued from page 663)

WHO REGIONAL MEETING OPENS IN  
BANGKOK ATTENDED BY DIRECTOR-  
GENERAL CANDAU

The Sixth Session of the South East Asia Regional Committee was held in Bangkok, Thailand in September.

Dr. Abdul Rahim, Delegate from Afghanistan, was elected Chairman. Delegates from seven countries as well as observers from the United Nations, the United Nations Children's Fund, the Food and Agriculture Organization and UNESCO were present when the meeting was called to order by the retiring chairman, Dr. M. Soerono of Indonesia. He stressed his great disappointment over the serious curtailment in funds available to the World Health Organization through the United Nations Technical Assistance Program. Under the circumstances, he said it would be necessary for all countries to redouble their efforts to utilize available assistance most effectively.

Dr. M. G. Candau, Director-General of the World Health Organization, on his arrival in Bangkok, emphasized in his address the economic value of health work. He declared that India would add an estimated 40 million man hours yearly in only one area where the Government was carrying out large-scale operations in malaria control. He recalled that India, like most of the other countries in South East Asia, is rapidly expanding its anti-malaria work with the aim of eliminating it as a public health problem within a few years.

"Investment in health," Dr. Candau said, "is indeed a gilt-edged security." He added that he hoped that the results already achieved by the Technical Assistance Program would not be jeopardized by economies which were ridiculously small as compared with the money the world is spending for non-constructive purposes.

The countries included in the South East Asia Region are: Afghanistan, Burma, Ceylon, India, Indonesia, Nepal and Thailand. In addition to delegations from member countries, there were attending representatives from French and Portuguese India.

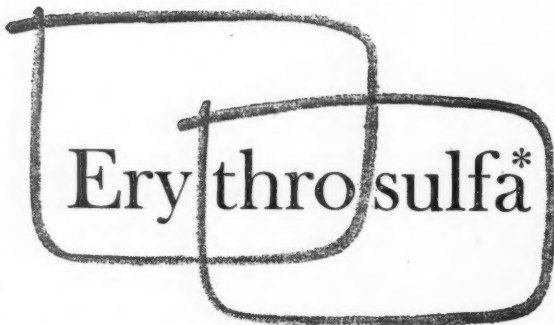
The new Charles H. Best Institute, at the University of Toronto, was officially opened on September 15, when Sir Henry Dale, Nobel laureate and Chairman of the Scientific Advisory Committee to the British Government, turned a golden key in the door of the new building.

The Institute will house the teaching facilities for the Department of Physiology, and will provide greatly increased research facilities for this Department and for the associated Banting and Best Department of Medical Research.

At a special convocation held prior to the opening, the University presented honorary degrees to Dr. Detlev W. Bronk, the new Director of the Rockefeller Institute for Medical Research; to Dr. B. A. Houssay, another Nobel laureate, of Argentina; to Dr. E. J. Joslin of Boston; to Dr. W. G. Penfield of Montreal, and to Sir Lionel Whitby, the Vice-Chancellor of the University of Cambridge. Convocation addresses were given by Sir Henry Dale and by Sir Lionel Whitby.

The first scientific sessions in the new Institute were held on September 16, when the various speakers included Dr. Joseph Hoet of Louvain, Professor E. D. Adrian of the University of Cambridge, Dr. Bronk, Sir Henry Dale, Dr. Houssay, Dr. Joslin, Dr. Penfield, Sir Lionel Whitby, and Dr. Robin Lawrence of London.

Dr. Ernest A. Watkinson, 41, Ottawa, has been promoted by the Civil Service Commission to head the occupational health division of the federal health department. For the past seven years Dr. Watkinson has been a medical officer with the occupational health division which provides technical and consultative services on various aspects of the health of workers in industry for provincial health departments and for federal agencies, including crown companies. He succeeds Dr. K. C. Charron who has been named as a principal medical officer of the federal health department. Dr. Watkinson is a graduate in medicine from Queen's University, Kingston, and in public health from the University of Toronto. In 1939 he enlisted in the Royal Canadian Army Medical Corps and served for six years in Canada and overseas. In 1946 he continued post-graduate studies at the School of Occupational Medicine, Wayne University, Detroit. Until recently Dr. Watkinson commanded 48 Casualty Clearing Station, R.C.A.M.C. (Reserve) in Ottawa with the rank of lieutenant-colonel. For the past two years he has also served as honorary secretary-treasurer of the Defence Medical Association of Canada.

reinforced action  
in common infections

antibiotic action of erythromycin  
chemotherapeutic  
effect of triple sulfonamides

valuable especially in staphylococcal,  
streptococcal, and pneumococcal  
infections

## Each tablet contains

Erythromycin . . . 100 mg.  
Sulfadiazine . . . 0.083 Gm.  
Sulfamerazine . . . 0.083 Gm.  
Sulfamethazine . . . 0.083 Gm.

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## TYPE OF READING

As to reading for relaxation, the medical man has to do extensive professional reading but should have another type of reading that does not tire him too deeply and also gives him a chance to do something outside of medicine. Many doctors find that the reading of biographies which show the development of individuals or the reading of history is entertaining and constructive. Civilization appears to know more about war than about peace as nearly everything seems to be achieved through struggle. Carlyle said, "In all times and places, the hero has been worshipped". Generally speaking, many readers are more interested in the biographies or achievements of outstanding military men than of any other group. The doings of Alexander the Great, Caesar, Hannibal, Richard the Lion-Heart, Frederick the Great, Napoleon, Wellington's *Peninsular Campaign* by Napier, Stonewall Jackson's *Valley Campaign*, and that excellent book, Wilmot's *Struggle for Europe* make good reading. The latter, recently published, is of importance because of its authoritative attitude and shows how we struggled for years to beat Hitlerism only to have Stalin emerge as the real victor, how we fought long years to have one dictator replace another as a menace to peace and security. You also arrive at the conclusion that the British seem to hold liberty as an ancient possession, itself a legacy from the past, the product of tradition which they will fight desperately to defend. You will

(Continued on page 72 of the advertising section)

A vagal blocking agent  
for peptic ulcer  
with LOW incidence  
of SIDE EFFECTS

PRANTAL methylsulfate (diphen-  
methanil methylsulfate) is an  
effective anticholinergic agent  
for treatment of peptic ulcer.  
Pain, pyrosis, nausea, and other  
symptoms of this syndrome are  
rapidly relieved. Troublesome  
side effects seldom occur.

Tablets 100 mg. q. 6 h.

**PRANTAL**

methylsulfate

*Schering* CORPORATION LIMITED, MONTREAL

PRANTAL



## NEWS AND NOTES

(Continued from page 70 of the advertising section)

also conclude that the British people, even when they have left their homeland and established new nations in other parts of the globe, have carried something of this history with them and that the same principles have come to prevail in countries that are comparatively young, such as Canada and the United States. It is also of interest to us as we are concerned with how liberty is to be fostered and maintained, especially when you come to think of the fine young people who are growing up who may have to go in the next few years through the terrible grinding millstones of war. Eisenhower appropriately said in his inaugural address, "A soldier's pack is not so heavy a burden as a prisoner's chains."

What you are also bound to grasp is the peculiar relationship that Englishmen have established with history, with tradition and their own past—the peculiar care which they have so often taken of the links which hold the past and present together. Unfortunately you also possibly will feel the depressing thought that man emerged from a cave with a club in his hand and may be driven back into the same by the atomic bomb. Therefore, it is necessary to reflect, prize what we have and try to spread love of history with the true desire of appreciation of other people's rights and of world peace. With always a true knowledge of the dangerous position we occupy in the world, such reading will lead you to conclude that we need have no shame in belonging to a group of Commonwealth nations or Dominions, or even in being the members of an Empire.—J. O. Baker in *The Historical Bulletin* of the Calgary Association Clinic, August, 1953.

PONOKA PIONEERS ORIENTATION  
COURSE

The importance of nurses receiving clinical instruction in psychiatric nursing was brought home to a group of sixteen instructresses, representing most of Alberta's nurse training schools, at a two-weeks' orientation course held at the Provincial Mental Hospital, Ponoka, Alberta. The course arose out of the findings of a special working committee of the C.N.A. While the daily patient average in mental hospitals is 46% of the total hospital population in Canada, less than 3% of all R.N.'s are nursing these patients. It had also been found that very few R.N.'s have had any preparation for psychiatric nursing.

The report points up the urgent necessity for educating nurses in the psychological aspects of illness in the general field as well as the promotion of teaching psychiatric nursing in the special field.

Alberta claims the distinction of being the first to give the recommended short course for teaching staffs. The course started with orientation talks and tours and the timetable included clinical and classroom work. The clinical experience was on a patient-assignment basis with each nurse having three patients from the active treatment wards, differing in age, type of illness and form of treatment. She participated in treatments and made attempts to relate to the patient through interview-type conversation, followed the patients to O.T. handicraft classes, into the hydrotherapy and E.C.T. units, on walks in the grounds, and saw how the various departments co-ordinated efforts to meet the patient's individual needs.

To aid her in understanding the therapeutic program as a continuous process, she sat in on diagnostic and treatment conferences.

Sessions in the wards gave rise to such questions as "How is the problem of the wandering, confused geriatric patient dealt with more easily here than in a general hospital?" "Are the emotional needs of a psychoneurotic better met by sympathetic listening to complaints or by praising accomplishments?" Those on the course wrote patient diaries, noting the quality of their relationships, patient's reactions to daily activities, patient's relationships to ward, etc.

COMMENT ON THE FIRST WORLD  
CONFERENCE ON MEDICAL EDUCATION

The success of the conference was abundantly proved by the number of those who arrived with undiminished enthusiasm for the final sessions. It was unlikely that much was said which was entirely new, and doubtless many teachers must have been pleased to learn that their established practice was abreast of the future. On the other hand it did disclose and stimulate further a sort of divine discontent which Prof. Melville Arnott would have as a perpetual attribute of anyone concerned with medical education. Indeed both consciously and subconsciously the conference seemed to sense the basic fault of present education, when it demanded that whatever was taught must be integrated with the whole and not just grafted on to it. The rapid growth of medical knowledge has overburdened undergraduate teaching, and there is an urgent need for analysis and dissection so that something better suited to his needs may emerge. The process is likely to need courageous action which will break down the rigid divisions between the various periods of the curriculum. Few subjects can be properly taught in watertight compartments or departments, and most need the resources of more than one for their proper exposition. This is not to deny the central place of the clinical discipline, which must persist as long as doctors have to care for the sick, but merely to plead for its enlargement by all available means. Examinations, too, must be more closely integrated with teaching if the relatively high rate of failures among these carefully selected students is to be reduced. A revolution in educational thought has already taken place, but energy and enthusiasm such as marked this conference are still needed to translate it into action.—(*The Lancet*, Sept. 5, 1953.)

ANNUAL REPORT OF THE DIRECTOR  
OF THE PAN AMERICAN  
SANITARY BUREAU

The Director of the Bureau, Dr. Fred L. Soper, has presented his annual report for 1952, a comprehensive survey of all the various health programs assisted by the Bureau throughout the hemisphere. The report pointed out certain difficulties encountered by the Bureau in the execution of its work. One perennial problem is that of obtaining the services of highly competent technical personnel. These, naturally must all come from the member countries, which often find it difficult to lose the services of such highly-trained and experienced personnel, even temporarily. At the same time, the Director pointed out, the member countries expect the Bureau to use personnel of the highest calibre in assisting them in their health programs. In making such highly competent personnel available to the Bureau, the governments are compensated it is pointed out, both by the better assistance such persons can render through the Bureau, and in the training and experience in the work of international public health such personnel obtain during their employment.

TRAINING COURSE FOR  
OCCUPATIONAL THERAPY AIDES

The second training course for Occupational Therapy Aides in the Province of Ontario has commenced this fall at the Ontario Hospital at Kingston. Some 20 students are on the course which lasts for about three months.

The course had its inception as the result of a serious shortage of trained personnel to staff O.T. departments of the Ontario Mental Hospitals. On the advice of the Canadian Association of Occupational Therapists and the Canadian Physiotherapy Association, it was decided to initiate the training school.

(Continued on page 74 of the advertising section)

*For the local treatment of individual  
joints in rheumatoid or osteoarthritis—*



**Intra-articular Injection of  
Saline Suspension of**

*HydroCortone*

ACETATE

(HYDROCORTISONE ACETATE MERCK)

Brown, *et al.*,<sup>1</sup> administered 3,487 intra-articular injections of HYDROCORTONE Acetate to 480 patients with rheumatoid or osteoarthritis. In some of these patients, HYDROCORTONE was used in addition to other therapeutic measures and proved an excellent adjunct. Improvement was observed in 87 per cent. Local relief was obtained promptly, without systemic effects.

*Literature on Request*

1. Brown, E. M., Frain, J. B., Udell, L., and Hollander, J. L.: Paper presented at Annual Meeting, American Rheumatism Association, Chicago, Ill., June 6, 1952.

HYDROCORTONE is the registered trade-mark of Merck & Co. Limited for its brand of hydrocortisone. This substance was first made available to the world through Merck research and production.



**MERCK & CO. LIMITED**

*Manufacturing Chemists*

MONTREAL • TORONTO • VANCOUVER • VALLEYFIELD

## NEWS AND NOTES

(Continued from page 72 of the advertising section)

CANADIAN HEALTH OFFICER  
APPOINTED W.H.O. AREA  
REPRESENTATIVE IN INDIA

The appointment of Dr. Oliver Leroux, of Canada, as the World Health Organization's Area Representative in India has been announced.

Born at Hawkesbury, Ontario (Canada), in 1907, Dr. Leroux attended first the University of Ottawa, taking the degrees of B.Sc., B.A., and B.Ph., and later, the University of Montreal, where he received his M.D. and L.M.C.C. degrees.

The new hospital being built at Jonquière, Quebec, Hôtel Dieu Notre Dame de l'Assomption, will receive a federal grant of \$279,730 towards its cost of construction. The new hospital, on which construction started two years ago, is expected to be completed next August. It will have accommodation for 234 patients, as well as bassinets for 39 infants. The federal grant for hospital construction totals \$247,000, with an additional \$28,730 towards the cost of a community health centre in the hospital and \$4,000 towards the cost of accommodation for 8 nurses.

Despite the progress made in reducing premature loss of life in the United States, one in every five deaths still occurs at ages under 45. Since 1900 the proportion of deaths at ages 45 to 64 rose from 18 to 28% of the total; and at ages 65 and over the proportion increased from about one-fourth to more than one-half of the total. This shift in mortality to the older ages reflects to some extent the rise in the proportion of older people in the population, but it is principally due to the more rapid reduction in the death rate at the younger than at the older age.

For the age groups under 45, the decrease in the death rate since 1900 is about 65%, and at ages under 15 about 85%. The decrease at ages 45 to 54 is 43%, and at ages 65 and over only 25%.

A major factor in bringing about these changes in the age picture of mortality, according to the Metropolitan Life Insurance statisticians, has been the remarkable control gained over the infectious diseases of childhood and early adult life. "It is to be expected that premature deaths will be reduced further," the statisticians observe, "which will mean a continuation of the long-term trend toward the concentration of mortality in later life."

WORLD INCIDENCE OF  
POLIOMYELITIS IN 1952

A recent number of the *Epidemiological and Vital Statistics Report* (6: 87, 1953) contains the latest official statistics on the annual incidence of poliomyelitis throughout the world. The *Report* stresses the difficulties in evaluating morbidity and mortality figures for this disease. Lack of laboratory confirmation, "which is beyond the reach of the general practitioner", makes the diagnosis of atypical or mild forms almost impossible; and few of the forms which are of doubtful diagnosis are reported to the health authorities. In many countries, some clinical criteria for the recognition of borderline cases have been defined, but there is as yet no international agreement concerning such criteria. This means that the number of cases notified in proportion to the actual number of clinical cases varies from country to country, and even from one region to another within the same country. In addition, the statistics from countries where medical practitioners are in short supply are of questionable value. However, despite these qualifications and reservations, the statistics in the *Report* are interesting and meaningful.

*Africa*—Slightly more than 2,200 cases—about 25% less than in 1951—were recorded in 1952 in about forty

countries and territories covering the greater part of the African continent and islands.

*America*.—There was a serious epidemic of poliomyelitis in Canada in 1952. The number of notifications both in August and in September exceeded the annual totals for most of the twenty-eight preceding years. In the province of Saskatchewan alone, where the greatest number of cases was recorded (1,205, as compared with 3,315 for the rest of the country) and the morbidity-rate was the highest for any one province (about 131 cases per 100,000 inhabitants), there were more notifications in 1952 than for the whole country during most of these same twenty-eight years. A decrease in incidence was noted in Ontario, Quebec, and Nova Scotia. This was particularly noteworthy with regard to Ontario, where 60% of the 2,020 cases (provisional figure) reported in 1951 occurred.

In the U.S.A., the number of notifications for 1952 exceeded that for any one year since cases of poliomyelitis have been notified. There were more than 57,000 cases—twice as many as in 1951 (28,386) and 36% more than in 1949 (42,033), which had been the record year until then. For the months of August and September alone, more cases were notified than for the whole of 1951.

The morbidity-rate for 1952 was about 37 per 100,000 inhabitants, as compared with 28 for 1949. The increase in morbidity was not accompanied by a parallel increase in mortality: while the number of deaths attributed to poliomyelitis just about doubled, the number of cases reported was seven times greater. The poliomyelitis mortality-rate during the past twenty years has varied from 0.4 per 100,000 inhabitants (1938, 1942, and 1947) to 1.8 (1949).

Information concerning many of the other countries and territories of the Americas is either lacking or very incomplete. However, it may be observed that the number of cases notified in 1952 was particularly high in Alaska, Guatemala, and Peru, with the largest number of notifications (74, 66, and 127, respectively) for any one year since 1939; in Chile, where the maximum figure of 607 notifications in 1950 was almost reached again; in Cuba, which suffered a serious epidemic (345 cases notified); and in Brazil, where epidemics occurred in certain parts of the country. In Uruguay, the situation appeared "to have returned to normal" (26 notifications as compared with 95 in 1951); in Argentina, Mexico, and the Panama Canal Zone, some improvement was noted.

*Asia*.—In the 25 countries and territories in Asia for which figures are available, slightly more than 5,700 cases were recorded—about 1,000 less than in 1951.

*Europe*.—While there was a considerable outbreak of poliomyelitis in Europe in 1952—about 32,000 cases, twice as many as were registered in 1951—the number of cases was 45% less than in the U.S.A., whose population is half of that of the European countries for which statistics are available. The countries which were most affected, and in which more than half of the cases occurred, were the Federal Republic of Germany, Denmark, the Netherlands, and Belgium. Less marked increases over the figures for the previous year were observed in England and Wales, France, Spain, Northern Ireland, Portugal, and the Republic of Ireland.

There was a serious outbreak of the disease in the Federal Republic of Germany. In the Netherlands, the number of notifications in 1952 exceeded that for the five years taken together but did not reach the maximum figure for the last thirty years—1,931 cases in 1943. In Belgium, also, the number of cases was greater than for the previous five years combined.

The *Report* draws attention to the fact that poliomyelitis, which was long thought to occur exclusively in the temperate zones, is "of frequent occurrence in tropical countries". In 1952, "veritable epidemics were observed in Mauritius, Cambodia, Thailand, Cuba, the Hawaiian Islands, and the Gilbert and Ellice Islands". While the figure for notifications may still be low in comparison with those in many countries in more temperate zones, they are revealing in view of the small number of physicians in many of these countries. They show that "the danger of poliomyelitis, far from being restricted to certain countries, remains or is becoming a threat of world-wide significance".

*End*

